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Award Number: W81XWH-10-1-0717

TITLE: Plasma Endothelial Microparticles in Multiple Sclerosis: A Novel Metric Assay of Disease Activity and Response to Treatment

PRINCIPAL INVESTIGATOR: Jonathan Steven Alexander, Ph.D.
Alireza Minagar, M.D.

CONTRACTING ORGANIZATION: Louisiana State University Health Sciences Center
Shreveport, LA 71103

REPORT DATE: September 2011

TYPE OF REPORT: Revised Annual

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

# REPORT DOCUMENTATION PAGE

*Form Approved*
*OMB No. 0704-0188*



| 1. REPORT DATE | 2. REPORT TYPE | 3. DATES COVERED |
|---|---|---|
| September 2011 | Revised Annual | 1 September 2010 – 31 August 2011 |

**4. TITLE AND SUBTITLE**

Plasma Endothelial Microparticles in Multiple Sclerosis: A Novel Metric Assay of Disease Activity and Response to Treatment

**5a. CONTRACT NUMBER**

**5b. GRANT NUMBER**
W81XWH-10-1-0717

**5c. PROGRAM ELEMENT NUMBER**

**6. AUTHOR(S)**

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**5d. PROJECT NUMBER**

**5e. TASK NUMBER**

**5f. WORK UNIT NUMBER**

**7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)**

Louisiana State University Health Sciences Center
Shreveport, LA 71103

**8. PERFORMING ORGANIZATION REPORT NUMBER**

**9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)**
U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

**10. SPONSOR/MONITOR'S ACRONYM(S)**

**11. SPONSOR/MONITOR'S REPORT NUMBER(S)**

**12. DISTRIBUTION / AVAILABILITY STATEMENT**
Approved for Public Release; Distribution Unlimited

**13. SUPPLEMENTARY NOTES**

**14. ABSTRACT**

Purpose: The purpose of this research project is to validate plasma microparticle profiling in multiple sclerosis with the goal of defining microparticle species which have value as predictive or prognostic biomarkers. Additionally, the findings of this project Scope: These finding apply to both civilian and military patients with MS. Major Findings: We have now linked iron deposits in specific brain structures in MS with particular microparticle species; some of these data have been presented at the last international society for neurovascular disease. Up to date report: We are continuing with patient recruitment and processing of samples and are collecting timed patient samples after recruitment towards completion of the project.

**15. SUBJECT TERMS**
Multiple Sclerosis, Endothelial, Inflammation, Adhesion molecules

| 16. SECURITY CLASSIFICATION OF: | | | 17. LIMITATION OF ABSTRACT | 18. NUMBER OF PAGES | 19a. NAME OF RESPONSIBLE PERSON |
|---|---|---|---|---|---|
| a. REPORT | b. ABSTRACT | c. THIS PAGE | | | USAMRMC |
| U | U | U | UU | 222 | 19b. TELEPHONE NUMBER *(include area code)* |

## Table of Contents

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## Introduction

The purpose of this research project is to validate plasma endothelial cell-derived microparticle profiling as predictive / prognostic biomarkers in multiple sclerosis. The main objectives are to demonstrate which microparticles are most significantly associated with disease activity, and how plasma microparticle profiles are changed by different patient therapies.

We and other labs have described endothelial microparticles as tiny (0.1um) cell derived membrane fragments which are shed into the bloodstream during periods of cell stress that often carry inflammatory biomarkers on their surface. In this way, microparticles represent a 'snapshot' of the vascular surface which can be safely and inexpensively analyzed. This type of approach provides similar information as an MRI scan with respect to blood brain barrier failure and vascular dysfunction. These particles will be isolated from collected plasma samples and labeled using antibodies which are studied by flow cytometry. The cost each assay is much lower and does not involve irradiation or MRI. Importantly, this study will provide important mechanistic and pathologic insights into how the severity of disease can be linked with the formation, release and character of these particles. The application of this approach may allow earlier treatment of MS patients to arrest their disease prior to progressive phases of MS.

Currently, despite the finding that microparticles are increased in active MS, little information is available as to how therapy affects microparticle numbers, or different classes of microparticles. Preliminary evidence from our lab indicates that some microparticle sub-types represent more sensitive and accurate markers of disease which could be used to quickly and inexpensively track disease activity in MS. The successful development of this approach might lead to improved and more widely available tests and earlier treatment of MS, vital to effective treatment of this condition.

## Body

The research was originally approved by the Louisiana State University Health Sciences Center – Shreveport's Institutional Review Board (IRB) on 08-26-2010. Annual continuing review was obtained from the IRB on 02-25-2011 and again on 08-19-2011, as the IRB ruled for a 6-month review period for this research. Supporting documentation of these approvals is attached in the appendices.

As of March 11, 2012, there have been 13 subjects with multiple sclerosis (MS) and two healthy controls (HC) enrolled into this research. The first three subjects with MS were viewed by the U.S. Department of Defense (DOD) as protocol deviations, as they were enrolled prior to the DOD's final approval of the local IRB's approved documents, although institutional final approval was obtained. Therefore, it was decided that the samples from these three subjects could not be used in the research study, and they were destroyed (IRB approved on 04-04-2011). The DOD requested a voluntary hold be placed on the research until the agency had completed a thorough review of all site IRB approved documents. This voluntary hold request was approved on 04-04-2011. Final DOD approval to proceed was granted in May 2011. Research activities resumed at that time.

Since study initiation, there have been five protocol deviations: the three samples collected prior to final DOD approval of all IRB approved documents, and two deviations concerning subjects not

having a blood draw at one month, as it was unclear to research staff whether the samples needed to be collected since these subjects had not yet started medication for multiple sclerosis. Since this time, the research protocol and objectives have been thoroughly reviewed with all research staff, and we do not anticipate any further issues in collecting plasma samples. The report of these 1 month deviations is attached in the appendices.

After careful consideration and discussions about the recruitment challenges to this study, we felt it would be best to revise the Inclusion/Exclusion criteria to include subjects who are current smokers. We do not feel that the inclusion of smokers in the study will affect the results in any way. Further, we feel there will be no safety issues as a result of this inclusion revision. Documentation of IRB approval of the revision and correspondence with the DOD is attached in the appendices.

**CD31neg54pos**

| | Cor Coef | Sig. | N |
|---|---|---|---|
| CD31neg54pos2 | 0.392 | 0.004 | 52 |

**CD31neg51pos**

| | Cor Coef | Sig. | N |
|---|---|---|---|
| CD31neg54pos2 | 0.381 | 0.005 | 52 |
| Volume of T1 hypointense lesions in cubic millimetres | 0.282 | 0.05 | 49 |
| Siexnax 2.5 with inpainting normalized grey Matter Volume | 0.309 | 0.026 | 52 |
| Siexnax 2.5 with inpainting normalized neocortical volume | 0.321 | 0.02 | 52 |

**CD31neg51pos_54pos**

| | Cor Coef | Sig. | N |
|---|---|---|---|
| CD31neg54pos2 | 0.448 | 0.001 | 52 |

**Volume of T2 hyperintense lesions in cubic millimetres**

| | Cor Coef | Sig. | N |
|---|---|---|---|
| Volume of T1 hypointense lesions in cubic millimeters | 0.801 | 0 | 49 |
| Sienax 2.5 with inpainting normalized White Matter Volume | -0.407 | 0.003 | 52 |
| Sienax 2.5 with inpainting normalized lateral ventricular volume | 0.482 | 0 | 52 |
| Sienax 2.5 with inpainting normalized neocortical volume | -0.184 | 0.191 | 52 |

HC

**globus_total_tphase_ppb_mean**

| | Cor. Coe | Sig | N |
|---|---|---|---|
| CD31neg54pos | -0.53 | 0.002 | 33 |

RRMS

**CD31pos51pos**

| | Cor. Coef | Sig. | N |
|---|---|---|---|
| dgm_tphase_ppb_mean | 0.344 | 0.035 | 38 |
| thal_total_tphase_ppb_mean | 0.413 | 0.01 | 38 |

**CD31neg54pos2**

| | Cor. Coef | Sig. | N |
|---|---|---|---|
| caudate_total_tphase_ppb_mean | -0.354 | 0.029 | 38 |

SPMS

**CD31neg54pos**

| | Cor. Coef | Sig. | N |
|---|---|---|---|
| globus_total_tphase_ppb_mean | 0.556 | 0.039 | 14 |

**CD31neg51pos**

| | Cor. Coef | Sig. | N |
|---|---|---|---|
| putamen_total_tphase_ppb_mean | 0.697 | 0.006 | 14 |

**Tables I and II (Table I, left conventional MRI scores, Table II – non-conventional MRI scores pairing with microparticle profiling) .** Data presented at 2nd International Society for Neurovascular Disease, Alexander, JS, Chaitanya, V and Minagar, A. 'Multiple Sclerosis and Cerebrovascular Endothelial Dysfunction' (Invited Talk,Perfusion, Hypoxia, Ischemia/Reperfusion Session, Tues, Febr)..

**Aim 1.** Determine the extent to which measurement of plasma endothelial microparticles (EMP) bearing seven adhesion molecules CD31 ($EMP^{CD31+}$), CD51 ($EMP^{CD51+}$), CD62E $EMP^{CD62E+}$), CD146 ($EMP^{CD146+}$), CD54 ($EMP^{CD54+}$), and annexinV ($EMP^{annexinV+}$), and platelet microparticles carrying CD62P molecule ($PMP^{CD62+}$) will correlate with MRI (+/-contrast) and EDSS scores in relapsing remitting multiple sclerosis (RRMS) under baseline (without any treatment with corticosteroids or beta-interferons), following therapy and during relapses. (Total time = 24 months).

**Progress.** In order to validate our analytical approach on the flow cytometry instruments currently in use at the LSU Health Sciences Center in Shreveport Flow Cytometry Core laboratory, we have analyzed 104 multiple sclerosis and control plasma samples, which were provided by Dr. Robert Zivadinov, MD (Buffalo Neuroimaging Analysis Center, Buffalo, NY) through an already approved IRB protocol now active in Buffalo. These microparticle samples were immune-labeled and analyzed by flow cytometry for the markers **Annexin $V^+$, $CD31^+$, $CD51^+$** and **$CD54^+$** by flow cytometry. We also analyzed plasma levels of TNF-a and IL-12/23 in these samples by enzyme linked immunosorbent analysis (ELISA). Dr. Robert Chervenak, the Director of the flow cytometry core laboratory and Ms. Deborah Chervenak (Core

laboratory manager) are assisting us with the measurement and interpretation of plasma microparticles in MS and control samples.

We have preliminarily found that $CD31^{-}$/Annexin-$V^{+}$ plasma microparticles (which appear to represent cell fragments derived from erythrocytes i.e. red blood cells) appear to be significantly elevated in relapsing remitting multiple sclerosis (MS) vs. controls (control = 3.904+/- 0.7116/ul vs. RRMS = 6.250+/- 0.8569, p=0.0445, two-tailed t-test). This is potentially an extremely important and novel finding which suggests that red cell fragmentation is increased in this form of MS, and may provide the first direct link to a source of increased tissue iron deposition which is characteristic for multiple sclerosis. The results of these data and their relationships to clinical findings are included in the attached report '*Buffalo Project Output.pdf'.*

These findings are currently being summarized in our first manuscript from this project entitled: '*MS Plasma microparticle profiles associated with conventional and novel MRI markers: Correlation with CNS Iron Deposition'* (Alexander, JS, Zivadinov, R, Weinstock-Guttman, Ramanathan, M, Monceaux, CP, Chaitanya, VG, Minagar, A, J. Neuroinflammation, *in preparation*).

**Task 2.** Use Gadolinium-contrast enhanced MRI to relate blood brain barrier changes to plasma EMP and PMP at baseline, following treatment with beta-interferons and during relapses. All enrolled MS patients routinely undergo MRI analysis.

**Progress.** With regard to our patient samples collected at LSU Health Sciences Center in Shreveport, we have now consented, collected, and processed 9 baseline MS samples and 2 control specimens, as well as 7 follow-up MS samples, for flow cytometry and are awaiting a large enough grouping of samples to begin analysis of cytokines by ELISA since each ELISA kit must be used to evaluate ~75 plasma samples simultaneously.

We have obtained baseline EDSS and MRI findings plus other clinical descriptors for every subject (excluding controls). These data will be used at the end of the study to correlate these observations with PMP findings. Each subject with MS has been initiated on interferon-beta 1b at 8 million units subcutaneously once every other day. So far, all study subjects have tolerated the treatment and have not voiced any complaints about side effects of the medication or any adverse events. In general, the study subjects report subjective improvements on treatment with interferon-beta. No local injection adverse reactions, including skin necrosis or infections, have been reported. Dr. Francisco A. Luque has now actively joined our team to assist in identifying additional treatment naïve patients from the Overton-Brooks VA Medical Center (VAMC) in Shreveport, LA but has not yet recruited participants from our VAMC.

**Task 3.** Determine the statistical correlations among the plasma EMP, plasma PMP, and EDSS at baseline, following treatment with beta-interferons and during relapses. (24 months). We plan to correlate these markers once all of these samples are collected.

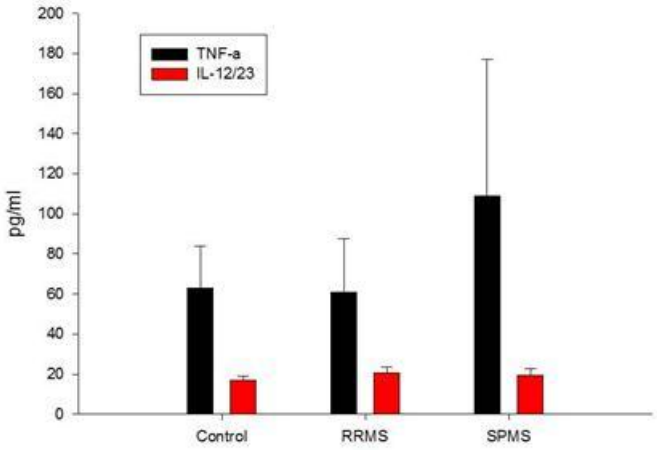
**Progress.** To date, 10 subjects with multiple sclerosis (MS) and 2 healthy controls (HC) have successfully been entered into this research project. An additional 3 subjects were initially drawn but were not included because although we had IRB approval, we had not received final approval from the DOD. These are being treated as protocol variations. This would have brought

our subject initiation to 13 MS. We have been able to successfully match the MS subjects with healthy controls on the basic demographic variables of age range, gender, and race. This is an accomplishment we feel we will be able to maintain throughout the duration of the study. Dr. Minagar has identified over 60 potential healthy controls which will be recruited as necessary to age and gender match MS recruits. The Study Follow Up Schedule detailing when each participant is/was scheduled for blood drawings is attached in the appendices.

**Aim 2. Determine how the MAPP profile of plasma EMP, plasma PMP, correlate with levels of pro-inflammatory cytokines and matrix metalloproteinases (MMPs), at baseline following treatment with beta-interferons and during relapses?**

**Task 1.** Determine plasma levels of Th1 cytokines (TNF-α, IL-1β, and IFN-γ, IL-12, IL-17 and IL-23) and the correlation between cytokines and clinical disease. (24 months).

**Progress.** We have now performed cytokine ELISAs on TNF-a and IL-12/23 from the samples which were obtained from MS samples collected from the Buffalo Neurosciences Group (**Fig. 1**). We found that although serum TNF-a levels in SPMS were elevated compared to either healthy controls or RRMS, the data did not reach statistical significance ($p>0.05$) (**see fig. 1**). Individual data points may be further re-analyzed to examine if individual samples might be further correlated with EDSS disease activity or MRI activity. These data will be incorporated into our '*MS Plasma microparticle profiles associated with conventional and novel MRI markers: Correlation with CNS Iron Deposition'* (Alexander, JS et al., J. Neuroinflammation, *in preparation*).




**Task 2.** Determine plasma and plasma levels of (MMP-8, MMP-9, TIMP-1) and the correlation between MMPs and MMAP levels. (24 months). We have not yet collected sufficient patient samples to perform these analyses, but intend to investigate this using the cohort of samples which have been supplied by Dr. Zivadinov.

**Aim 3 : Determine the relationship between EMP, PMP and elevated levels of pro-inflammatory cytokines and MMPs with trans-endothelial migration and barrier function, at baseline, following beta-interferon therapy and during MS relapses.**

**Task 1.** Determine how EMP and PMP in MS patients affect blood brain barrier. **Task 2.** Demonstrate how blockade of individual cytokines and MMPs recognized during active disease affect blood-brain endothelial barrier dysregulation by EMPs. These types of experiments are routinely performed in the PIs laboratory (see recent publication by **Chaitanya GV, Cromer WE, Wells SR, Jennings MH, Couraud PO, Romero IA, Weksler B, Erdreich-Epstein A, Mathis JM, Minagar A, Alexander JS Gliovascular and cytokine interactions modulate brain endothelial barrier in vitro. J Neuroinflammation. 2011 Nov 23;8:162**.) **Task 3.**

Determine how EMP and PMP in MS patients affect trans-endothelial monocyte migration. **Task 4.** Determine how individual cytokines and MMPs recognized during active disease affect trans-endothelial monocyte migration. Similary, this approach has been developed and validated in the PIs laboratory (**Carpenter and Alexander, 2008**). **Task 5.** Examine how EMPs affect expression of endothelial junctional proteins. Our lab developed this concept and approach (see **Minagar et al., 2003, 2003b**). Before initiating an extensive comparison, we are still collecting sufficient samples to begin these studies.

**Key Research Accomplishments**

1) We have established a work-flow from patient recruitment, blood sampling and data capturing,
2) We have validated our flow-cytometric approach with Dr. Robert Chervenak
3) Have established and validate the reproducibility of enzyme linked immunosorbent analysis in our assays.
Our research shown in **Table I** indicates that CD31-/CD51+ microparticles are positively correlated with the volume of T1 hypointense lesions, Sienax 2.5 inpainting of grey matter and neocortex volume.

Our research in **Table II** indicates:
5) that in healthy controls, $CD31^{-}/CD54^{+}$ microparticles were positively correlated with globus total tphase ppb (iron content)
6) that in RRMS, that $CD31^{+}/CD51^{+}$ microparticles were positively associated with deep gray matter tphase ppb (iron content)
7) that in relapsing remitting MS, that $CD31^{+}/CD54^{+}$ microparticles were also positively correlated with thalamus tphase ppb (iron content)
4) that in RRMS, $CD31^{-}/CD54^{+}$ microparticles were also positively associated with caudate total tphase
ppb (iron content)
5) that in SPMS, $CD31^{-}/CD54^{+}$ microparticles were statistically and positively associated with globus total tphase ppb (iron content)
6) that in SPMS CD31-/CD51+ microparticles were statistically and positively correlated with putamen total tphase ppb (iron content)

**Reportable Outcomes**
The most important reportable outcomes are found in Table II, regarding iron deposition in the brain in MS and the presence of particular microparticle species. Several candidate microparticle species have been identified which are positively correlated with the elevated deposition of iron within specific structures in the brain associated with MS pathophysiology. The fact that these microparticles are associated with iron suggests that processes which are active during the formation of these particles also permits the trans blood brain barrier penetration of iron sources e.g. red cells, hemoglobin, transferrin, hemosiderin. The presence of iron deposition will contribute to 'Fenton' chemistry in the central nervous system (the formation of toxic/signaling levels of hydroxyl radicals) which is an important initial step leading to the development of several MS related pro-inflammatory processes.

The findings from the Buffalo study are currently being summarized in our first manuscript from this project entitled: '*MS Plasma microparticle profiles associated with conventional and novel MRI markers: Correlation with CNS Iron Deposition'* (Alexander, JS, Zivadinov, R, Weinstock-Guttman, Ramanathan, M, Monceaux, CP, Chaitanya, VG, Minagar, A, J. Neuroinflammation, *in preparation*).

Data was presented at the 2nd International Society for Neurovascular Disease, Alexander, JS, Chaitanya, V and Minagar, A. 'Multiple Sclerosis and Cerebrovascular Endothelial Dysfunction' (Invited Talk,Perfusion, Hypoxia, Ischemia/Reperfusion Session, Mon, Feb 20).

**Conclusions.**

We conclude that this approach is valid and has so far provided important findings. Additional anticipated studies will increase the numbers of patients and should hopefully permit more in depth analysis of microparticle species which have predictive power. The mechanistic studies in Aim #3 should help to better define the underlying significance of microparticles as causes, not only markers of MS stress and injury.

**References**

Chaitanya GV, Cromer WE, Wells SR, Jennings MH, Couraud PO, Romero IA, Weksler B, Erdreich-Epstein A, Mathis JM, Minagar A, **Alexander JS**. Gliovascular and cytokine interactions modulate brain endothelial barrier in vitro. J Neuroinflammation. 2011 Nov 23;8:162.

**Carpenter** AC, **Alexander JS**. Endothelial PKC delta activation attenuates neutrophil transendothelial migration. Inflamm Res. 2008 May;57(5):216-29.

Minagar A, Long A, Ma T, Jackson TH, Kelley RE, **Ostanin** DV, Sasaki M, Warren AC, Jawahar A, Cappell B, **Alexander JS**. Interferon (IFN)-beta 1a and IFN-beta 1b block IFN-gamma-induced disintegration of endothelial junction integrity and barrier. Endothelium. 2003;10(6):299-307.

Minagar A, **Ostanin** D, Long AC, Jennings M, Kelley RE, Sasaki M, **Alexander JS**. Serum from patients with multiple sclerosis downregulates occludin and VE-cadherin expression in cultured endothelial cells. Mult Scler. 2003 Jun;9(3):235-8.

LOUISIANA STATE UNIVERSITY
HEALTH SCIENCES CENTER - Shreveport
Institutional Review Board (IRB) for Human Research Subjects

Protocol No: H11-011
Date of Initial Approval: 8/26/2010

# NOTICE OF COMMITTEE ACTION
## Progress Report for Continuing Review

**Location of Subject Population**

☑ LSUHSC Off-Site: ☐ VA ☐ BRF ☐ Shriners ☐ Other:

If protocol includes VA patients, R&D Committee must review and approve protocol prior to entering VA patients. If protocol includes VA patients, send a copy of this report to VA Medical Research Service (151).

**Principal Investigator:** J. Steven Alexander, PhD **Telephone:** (318) 675-0000

**Department:** Physiology **Section:**

**Protocol Title:** Plasma Endothelial Microparticles in Multiple Sclerosis: A Novel Metric Assay of Disease Activity and Response to Treatment

The Institutional Review Board has evaluated the submission in accordance with the guidelines established for activities involving human research subjects.

**Recommendation of Institutional Review Board:**

☑ Approved
☐ Deferred for Substantive Changes
☐ Deferred for Non-substantive Changes
☐ Approved in Principle
☐ Administrative Hold
☐ Lapse in Continuing Review Approval
☐ Study Suspended
☐ Study Terminated
☐ Disapproved

**Approval Period: Start:** 8/26/2011 **End:** 8/25/2012 **Submit next review in (mo/yr):** June 12

**Risk Level:** minimal risk **Review Duration:** 1 year(s)

**NOTES:**

1.There is no "grace period" allowed that extends the conduct of research beyond the last date of IRB approval. To prevent a lapse in IRB approval, submission of the Continuing Review must be received in a time to be processed before the lapse date. (45 CFR Part 46.109(e))
2.If IRB approval lapses, all activities relating to enrollment and the participation of human subjects are to be suspended immediately. The Principal Investigator must immediately contact the IRB and submit a list of research subjects to the Chair.
3.When corresponding with the IRB, use the assigned IRB protocol number.

8/19/11
IRB Review Date

Mary Buffington, MD
Institutional Review Board

**Protocol No.:** H11-011

**Please see below for any IRB requests: (i.e - Revisions, Directives, Reminders or other important information):**

Please be reminded that this study was on Voluntary Hold at the request of the sponsor. Although you have received approval to remove the hold form the IRB you should not re-initiate study activities until you have final approval from the Sponsor.

**IRB Approval After Revisions:** _____

Institutional Review Board Date

LOUISIANA STATE UNIVERSITY
HEALTH SCIENCES CENTER - Shreveport
Institutional Review Board (IRB) for Human Research Subjects

Protocol No: H11-011
Date of Initial Approval: 8/26/2010

APPROVED

# NOTICE OF COMMITTEE ACTION
## Progress Report for Continuing Review

**Location of Subject Population**

☑ LSUHSC Off-Site: ☐ VA ☐ BRF ☐ Shriners ☐ Other:

If protocol includes VA patients, R&D Committee must review and approve protocol prior to entering VA patients. If protocol includes VA patients, send a copy of this report to VA Medical Research Service (151)

**Principal Investigator:** J. Steven Alexander, PhD **Telephone:** (318) 675-0000

**Department:** Physiology **Section:**

**Protocol Title:** Plasma Endothelial Microparticles in Multiple Sclerosis: A Novel Metric Assay of Disease Activity and Response to Treatment

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**Recommendation of Institutional Review Board:**

☑ Approved
☐ Deferred for Substantive Changes
☐ Deferred for Non-substantive Changes
☐ Approved in Principle
☐ Administrative Hold
☐ Lapse in Continuing Review Approval
☐ Study Suspended
☐ Study Terminated
☐ Disapproved

**Approval Period: Start:** 2/26/2011 **End:** 8/25/2011 **Month of next review:** June 11

**Risk Level:** minimal risk **Review Duration:** 6 month(s)

Possibility of protocol SUSPENSION:
If revisions are not received and approved by prior year's end date, all activities relating to the enrollment or participation of humans in the above named project are suspended

2/25/2011
Prior End Date

2/25/11
IRB Review Date

William J. Russell, Ph.D.
LSUHSC-S Institutional Review Board Reviewer

***NOTE: WHEN SUBMITTING YOUR REVISIONS TO THE IRB OFFICE, PLEASE SUBMIT TWO (2) REVISED COPIES OF YOUR CONSENT FORM***. Revisions should be submitted to the IRB Office for review and approval by the LSUHSC-S IRB Chairperson before proceeding with this study. ALL revisions MUST be highlighted for IRB submission. NOTE: Pharmaceutical Company funded trials require a fully executed contract before study can be initiated.

**Revisions:**

**Protocol No.:** H11-011

**IRB Revisions Requested for Final Approval. Please address the following concerns:**

---

**IRB Final Approval After Revisions:** _____

LSUHSC-S IRB Officer Date

LOUISIANA STATE UNIVERSITY
HEALTH SCIENCES CENTER - Shreveport
Institutional Review Board (IRB) for the
Protection of Human Research Subjects

Protocol No: H11-011
Date Received: 7/1/2010

# NOTICE OF COMMITTEE ACTION
## Initial Review of Protocol

**Location of Subject Population**

☑ LSUHSC Off-Site: ☐ VA ☐ BRF ☐ Shriners ☐ Other:

If protocol includes VA patients, R&D Committee must review and approve protocol prior to entering VA patients. If protocol includes VA patients, send a copy of this report to VA Medical Research Service (151)

**Principal Investigator:** J. Steven Alexander, PhD **Telephone:** (318) 675-0000

**Department:** Physiology **Section:**

**Protocol Title:** Plasma Endothelial Microparticles in Multiple Sclerosis: A Novel Metric Assay of Disease Activity and Response to Treatment

This is to certify that the IRB Chairperson or Designee reviewed the above project. The project was evaluated in accordance with the guidelines established for activities involving human research subjects.

**Recommendation of Institutional Review Board:**

☑ Approved Protocol
☐ Deferred for Substantive Changes
☐ Deferred for Non-Substantive Changes
☐ Administrative Hold
☐ Approved in Principle
☐ Study Suspended
☐ Study Terminated
☐ Lapse in Continuing Review Approval
☐ Disapproved

**Expedited review category:**

2 - Collection of blood samples by finger stick, heel stick, ear stick, or venipuncture as follows: (a) from healthy, non-pregnant adults who weigh at least 110 pounds. (b) from other adults and children, considering the age, weight, and health of the subjects, the collection procedure, the amount of blood to be collected, the frequency with which it will be collected.

**Description:**

This research proposal intends to validate plasma endothelial cell-derived microparticle profiling as a predictive/prognostic biomarker in multiple sclerosis. The objectives are to demonstrate which microparticles are most significantly associated with disease activity, and how plasma microparticle profiles are changed by different patient therapies.

**Approval Period:** **Start:** 8/26/2010 **End:** 2/25/2011

ICF Version:
Protocol Date:
Inv Broch Date:

**The Date of Your Next Review Is** January 2011

**Risk Level:** minimal risk **Review Duration:** 6 month(s)

NOTE:
1. Principal Investigator must attach Investigational Drug Information Record to the subject's chart!!!
2. A copy of the signed Consent Form MUST be on the subject's chart. The Consent Form signatures may be obtained only by the Principal Investigator or one of the listed Co-investigators. (SOP, pp 9.01-9.02)
3. You are required to notify immediately, in writing, the Institutional Review Board for Human Research of any serious adverse reactions to this research protocol. (SOP, p. 10.01)
4. In corresponding with the IRB, use the assigned protocol number.
5. If this protocol is audited, the PI must submit the Audit Report to the IRB.
6. If IRB approval lapses prior to notice of reapproval, all activities are suspended at the end date of the approval period.

8/26/2010
Date

William J. Russell, Ph.D.
Institutional Review Board

**Approval After Revisions:**

Initial _____ Date _____

The revisions to the above-referenced Protocol and Consent Form comply with IRB Guidelines, and you are now free to proceed with the study.

**Revisions Page**

**Protocol No.:** H11-011

***NOTE: WHEN SUBMITTING YOUR REVISIONS TO THE GRANTS OFFICE, PLEASE SUBMIT TWO (2) COMPLETE COPIES OF YOUR IRB PROTOCOL***. Revisions should be in bold print or highlighted. Revisons should be submitted to the Office of Grants Administration for review and approval by the IRB Chairperson/Designee before proceeding with this study. NOTE: Pharmaceutical Company funded trials require a fully executed contract before study can be initiated.

**Initial Review of Protocol Revisions Page:**

LOUISIANA STATE UNIVERSITY
HEALTH SCIENCES CENTER - Shreveport
Institutional Review Board (IRB) for Human Research Subjects

Protocol No: H11-011

# NOTICE OF IRB DETERMINATION
## Modification of Protocol or Reportable New Information

**Location of Subject Population**

☑ LSUHSC Off-Site: ☐ VA ☐ BRF ☐ Shriners ☐ Other:

If protocol includes VA patients, R&D Committee must review and approve protocol prior to entering VA patients. If protocol includes VA patients, send a copy of this submission to VA Medical Research Service (151).

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**Protocol Title:** Plasma Endothelial Microparticles in Multiple Sclerosis: A Novel Metric Assay of Disease Activity and Response to Treatment

The Institutional Review Board has evaluated the submission in accordance with the guidelines established for activities involving human research subjects.

**Recommendation of Institutional Review Board:**

☐ Approved
☑ Acknowledged
☐ Approved After Revisions Accepted
☐ Deferred for Substantive Changes
☐ Deferred for Non-Substantive Changes
☐ Approved in Principle
☐ Study Suspended
☐ Study Terminated
☐ Disapproved
☐ Does Not Qualify as an Expedited Review

Reason: _____

**Description:** Protocol deviations - Two research subjects enrolled in the study did not have blood collected for plasma endothelial microparticle analysis because it was unclear whether the Month 1 lab should be collected if the subject has not been on their MS medication for one month prior to the Month 1 lab visit. After much discussion between the PI and sub-investigator it was determined that the Month 1 lab would be collected regardless of the length of time the patient has been on medication.

1. Subject PEM004
a. Date deviation occurred - August 11, 2011
b. Date deviation was reported to the sponsor - September 2011
c. Description of deviation - Because this subject is participating in the Patient Assistance Program to receive her prescribed medication, she had not yet begun taking the medication when she was seen at her Month 1 visit. PI was not available, but discussed with sub-investigator, who felt that since the subject had not been on medications for one month, he did not feel we were to collect the Month 1 labs to analyze plasma endothelial microparticles. The rest of subjects assessments were completed, but blood was not collected.
D. PI assessment - Protocol deviation did not have a significant impact on the safety and welfare of the study patient. The blood draw is not a safety assessment, but part of a microbiology research study.
E. Corrective action - Study personnel have discussed the issue of subjects who may not be taking prescribed medications right away (or one month prior to Visit Month 1). It has been determined that Month 1 labs will be collected for all subjects regardless of their time on MS medication.

2. Subject PEM006
a. Date deviation occurred - September 1, 2011
b. Date deviation was reported to the sponsor - September 2011

c. Description of deviation - Because this subject is participating in the Patient Assistance Program to receive her prescribed medication, she had not yet begun taking the medication when she was seen at her Month 1 visit. PI was not available, but discussed with sub-investigator, who felt that since the subject had not been on medications for one month, he did not feel we were to collect the Month 1 labs to analyze plasma endothelial microparticles. The rest of subjects assessments were completed, but blood was not collected.
D. PI assessment - Protocol deviation did not have a significant impact on the safety and welfare of the study patient. The blood draw is not a safety assessment, but part of a microbiology research study.
E. Corrective action - Study personnel have discussed the issue of subjects who may not be taking prescribed medications right away (or one month prior to Visit Month 1). It has been determined that Month 1 labs will be collected for all subjects regardless of their time on MS medication.

11-11-11
Date

Rita Horton
Rita Horton, MD
Institutional Review Board

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**Protocol No.:** H11-011

**The following revisions or information must be submitted to secure final IRB approval:**

***NOTE: All requested revisions are to be submitted to the IRB Office for review and approval by the IRB Chairperson/Designee before proceeding.

LOUISIANA STATE UNIVERSITY
HEALTH SCIENCES CENTER - Shreveport
Institutional Review Board (IRB) for Human Research Subjects

Protocol No: H11-011

# NOTICE OF IRB DETERMINATION
## Modification of Protocol or Reportable New Information

**Location of Subject Population**

☑ LSUHSC Off-Site: ☐ VA ☐ BRF ☐ Shriners ☐ Other:

If protocol includes VA patients, R&D Committee must review and approve protocol prior to entering VA patients. If protocol includes VA patients, send a copy of this submission to VA Medical Research Service (151).

**Principal Investigator:** J. Steven Alexander, PhD **Telephone:** (318) 675-0000

**Department:** Physiology **Section:**

**Protocol Title:** Plasma Endothelial Microparticles in Multiple Sclerosis: A Novel Metric Assay of Disease Activity and Response to Treatment

The Institutional Review Board has evaluated the submission in accordance with the guidelines established for activities involving human research subjects.

**Recommendation of Institutional Review Board:**

☒ Approved
☐ Acknowledged
☐ Approved After Revisions Accepted
☐ Deferred for Substantive Changes
☐ Deferred for Non-Substantive Changes
☐ Approved in Principle
☐ Study Suspended
☐ Study Terminated
☐ Disapproved
☐ Does Not Qualify as an Expedited Review

Reason: _____

**Description:** Approval for Inclusion/Exclusion Criteria to now include research subjects and healthy controls who are smokers. The criteria for being a non-smoker has been revised in the protocol provided. No changes needed to the ICF.

1/26/2012
Date

John Vanchiere, MD, PhD
Institutional Review Board

**Protocol No.:** H11-011

**The following revisions or information must be submitted to secure final IRB approval:**

# Frequencies

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Statistics**

| | | Study group | Type of disease course and not-disease groups |
|---|---|---|---|
| N | Valid | 85 | 85 |
| | Missing | 0 | 0 |

# Frequency Table

**Study group**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Adult NC | 33 | 38.8 | 38.8 | 38.8 |
| | Adult MS | 52 | 61.2 | 61.2 | 100.0 |
| | Total | 85 | 100.0 | 100.0 | |

**Type of disease course and not-disease groups**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Adult non-familial NC | 33 | 38.8 | 38.8 | 38.8 |
| | RR | 38 | 44.7 | 44.7 | 83.5 |
| | SP | 14 | 16.5 | 16.5 | 100.0 |
| | Total | 85 | 100.0 | 100.0 | |

# T-Test

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Group Statistics**

| | Study group | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Age at Doppler visit | Adult NC | 33 | 43.36 | 12.886 | 2.243 |
| | Adult MS | 52 | 47.92 | 10.538 | 1.461 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | |
|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) |
| Age at Doppler visit | Equal variances assumed | 1.890 | .173 | -1.781 | 83 | .079 |
| | Equal variances not assumed | | | -1.703 | 58.334 | .094 |

**Independent Samples Test**

| | | t-test for Equality of Means | | | |
|---|---|---|---|---|---|
| | | | | 95% Confidence Interval of the Difference | |
| | | Mean Difference | Std. Error Difference | Lower | Upper |
| Age at Doppler visit | Equal variances assumed | -4.559 | 2.560 | -9.650 | .531 |
| | Equal variances not assumed | -4.559 | 2.677 | -9.918 | .799 |

# Crosstabs

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Case Processing Summary**

| | Cases | | | | | |
|---|---|---|---|---|---|---|
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| Gender * Study group | 85 | 100.0% | 0 | .0% | 85 | 100.0% |

**Gender * Study group Crosstabulation**

Count

| | | Study group | | |
|---|---|---|---|---|
| | | Adult NC | Adult MS | Total |
| Gender | Male | 15 | 13 | 28 |
| | Female | 17 | 39 | 56 |
| | Transgender male | 1 | 0 | 1 |
| | Total | 33 | 52 | 85 |

**Chi-Square Tests**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 5.830[a] | 2 | .054 |
| Likelihood Ratio | 6.126 | 2 | .047 |
| Linear-by-Linear Association | 2.521 | 1 | .112 |
| N of Valid Cases | 85 | | |

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .39.

# T-Test

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Group Statistics**

| | Study group | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| CD31pos | Adult NC | 33 | 72.6627 | 12.39394 | 2.15751 |
| | Adult MS | 52 | 68.8350 | 12.19085 | 1.69057 |
| CD31pos51pos | Adult NC | 33 | 8.4103 | 4.02415 | .70052 |
| | Adult MS | 52 | 7.8640 | 4.44143 | .61592 |
| CD31pos51pos_54pos | Adult NC | 33 | 2.4530 | 2.75748 | .48002 |
| | Adult MS | 52 | 3.2196 | 3.59830 | .49899 |
| CD31neg54pos | Adult NC | 33 | 10.6273 | 5.83520 | 1.01578 |
| | Adult MS | 52 | 11.8688 | 7.04250 | .97662 |
| CD31neg51pos | Adult NC | 33 | 2.8655 | 1.28019 | .22285 |
| | Adult MS | 52 | 2.5533 | 1.30738 | .18130 |
| CD31neg51pos_54pos | Adult NC | 33 | .6173 | 1.60902 | .28009 |
| | Adult MS | 52 | .5781 | .78571 | .10896 |
| CD31neg54pos2 | Adult NC | 33 | 2.1739 | 1.13558 | .19768 |
| | Adult MS | 52 | 2.4669 | 1.39897 | .19400 |

. Difference in HC vs. MS

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|---|---|---|---|---|---|
| | | F | Sig. | t | df |
| CD31pos | Equal variances assumed | .016 | .899 | 1.402 | 83 |
| | Equal variances not assumed | | | 1.396 | 67.413 |
| CD31pos51pos | Equal variances assumed | .940 | .335 | .573 | 83 |
| | Equal variances not assumed | | | .586 | 73.164 |
| CD31pos51pos_54pos | Equal variances assumed | 1.628 | .205 | -1.044 | 83 |
| | Equal variances not assumed | | | -1.107 | 79.949 |
| CD31neg54pos | Equal variances assumed | .366 | .547 | -.845 | 83 |
| | Equal variances not assumed | | | -.881 | 77.144 |
| CD31neg51pos | Equal variances assumed | .232 | .631 | 1.082 | 83 |
| | Equal variances not assumed | | | 1.087 | 69.323 |
| CD31neg51pos_54pos | Equal variances assumed | .394 | .532 | .150 | 83 |
| | Equal variances not assumed | | | .130 | 41.817 |
| CD31neg54pos2 | Equal variances assumed | .424 | .517 | -1.010 | 83 |
| | Equal variances not assumed | | | -1.058 | 77.953 |

**Independent Samples Test**

| | | t-test for Equality of Means | | |
|---|---|---|---|---|
| | | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| CD31pos | Equal variances assumed | .165 | 3.82773 | 2.73073 |
| | Equal variances not assumed | .167 | 3.82773 | 2.74096 |
| CD31pos51pos | Equal variances assumed | .568 | .54626 | .95376 |
| | Equal variances not assumed | .560 | .54626 | .93278 |
| CD31pos51pos_54pos | Equal variances assumed | .300 | -.76659 | .73437 |
| | Equal variances not assumed | .272 | -.76659 | .69239 |
| CD31neg54pos | Equal variances assumed | .401 | -1.24157 | 1.46963 |
| | Equal variances not assumed | .381 | -1.24157 | 1.40911 |
| CD31neg51pos | Equal variances assumed | .283 | .31219 | .28865 |
| | Equal variances not assumed | .281 | .31219 | .28729 |
| CD31neg51pos_54pos | Equal variances assumed | .881 | .03920 | .26121 |
| | Equal variances not assumed | .897 | .03920 | .30054 |
| CD31neg54pos2 | Equal variances assumed | .316 | -.29298 | .29016 |
| | Equal variances not assumed | .293 | -.29298 | .27697 |

**Independent Samples Test**

| | | t-test for Equality of Means | |
|---|---|---|---|
| | | 95% Confidence Interval of the Difference | |
| | | Lower | Upper |
| CD31pos | Equal variances assumed | -1.60359 | 9.25905 |
| | Equal variances not assumed | -1.64263 | 9.29809 |
| CD31pos51pos | Equal variances assumed | -1.35072 | 2.44325 |
| | Equal variances not assumed | -1.31269 | 2.40522 |
| CD31pos51pos_54pos | Equal variances assumed | -2.22721 | .69404 |
| | Equal variances not assumed | -2.14451 | .61134 |
| CD31neg54pos | Equal variances assumed | -4.16460 | 1.68146 |
| | Equal variances not assumed | -4.04738 | 1.56424 |
| CD31neg51pos | Equal variances assumed | -.26194 | .88631 |
| | Equal variances not assumed | -.26089 | .88526 |
| CD31neg51pos_54pos | Equal variances assumed | -.48034 | .55873 |
| | Equal variances not assumed | -.56740 | .64579 |
| CD31neg54pos2 | Equal variances assumed | -.87011 | .28414 |
| | Equal variances not assumed | -.84440 | .25843 |

## NPar Tests

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d sample size with CD31 data.sav
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## Mann-Whitney Test

. Difference in HC vs. MS

**Ranks**

| | Study group | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| CD31pos | Adult NC | 33 | 47.92 | 1581.50 |
| | Adult MS | 52 | 39.88 | 2073.50 |
| | Total | 85 | | |
| CD31pos51pos | Adult NC | 33 | 47.03 | 1552.00 |
| | Adult MS | 52 | 40.44 | 2103.00 |
| | Total | 85 | | |
| CD31pos51pos_54pos | Adult NC | 33 | 39.00 | 1287.00 |
| | Adult MS | 52 | 45.54 | 2368.00 |
| | Total | 85 | | |
| CD31neg54pos | Adult NC | 33 | 40.15 | 1325.00 |
| | Adult MS | 52 | 44.81 | 2330.00 |
| | Total | 85 | | |
| CD31neg51pos | Adult NC | 33 | 47.83 | 1578.50 |
| | Adult MS | 52 | 39.93 | 2076.50 |
| | Total | 85 | | |
| CD31neg51pos_54pos | Adult NC | 33 | 39.74 | 1311.50 |
| | Adult MS | 52 | 45.07 | 2343.50 |
| | Total | 85 | | |
| CD31neg54pos2 | Adult NC | 33 | 39.70 | 1310.00 |
| | Adult MS | 52 | 45.10 | 2345.00 |
| | Total | 85 | | |

**Test Statistics[a]**

| | CD31pos | CD31pos51pos | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Mann-Whitney U | 695.500 | 725.000 | 726.000 | 764.000 | 698.500 |
| Wilcoxon W | 2073.500 | 2103.000 | 1287.000 | 1325.000 | 2076.500 |
| Z | -1.465 | -1.199 | -1.190 | -.848 | -1.438 |
| Asymp. Sig. (2-tailed) | .143 | .230 | .234 | .397 | .150 |

a. Grouping Variable: Study group

. Difference in HC vs. MS

**Test Statistics**[a]

| | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|
| Mann-Whitney U | 750.500 | 749.000 |
| Wilcoxon W | 1311.500 | 1310.000 |
| Z | -.970 | -.983 |
| Asymp. Sig. (2-tailed) | .332 | .326 |

a. Grouping Variable: Study group

# T-Test

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Group Statistics**

| | Type of disease course and not-disease groups | N | Mean |
|---|---|---|---|
| CD31pos | Adult non-familial NC | 33 | 72.6627 |
| | RR | 38 | 69.5966 |
| CD31pos51pos | Adult non-familial NC | 33 | 8.4103 |
| | RR | 38 | 8.0503 |
| CD31pos51pos_54pos | Adult non-familial NC | 33 | 2.4530 |
| | RR | 38 | 3.5932 |
| CD31neg54pos | Adult non-familial NC | 33 | 10.6273 |
| | RR | 38 | 12.3584 |
| CD31neg51pos | Adult non-familial NC | 33 | 2.8655 |
| | RR | 38 | 2.5197 |
| CD31neg51pos_54pos | Adult non-familial NC | 33 | .6173 |
| | RR | 38 | .6468 |
| CD31neg54pos2 | Adult non-familial NC | 33 | 2.1739 |
| | RR | 38 | 2.3697 |

**Group Statistics**

| | Type of disease course and not-disease groups | Std. Deviation | Std. Error Mean |
|---|---|---|---|
| CD31pos | Adult non-familial NC | 12.39394 | 2.15751 |
| | RR | 11.58234 | 1.87890 |
| CD31pos51pos | Adult non-familial NC | 4.02415 | .70052 |
| | RR | 4.71066 | .76417 |
| CD31pos51pos_54pos | Adult non-familial NC | 2.75748 | .48002 |
| | RR | 3.95635 | .64181 |
| CD31neg54pos | Adult non-familial NC | 5.83520 | 1.01578 |
| | RR | 7.37356 | 1.19615 |
| CD31neg51pos | Adult non-familial NC | 1.28019 | .22285 |
| | RR | 1.24147 | .20139 |
| CD31neg51pos_54pos | Adult non-familial NC | 1.60902 | .28009 |
| | RR | .85054 | .13798 |
| CD31neg54pos2 | Adult non-familial NC | 1.13558 | .19768 |
| | RR | 1.22253 | .19832 |

. Differences in HC vs. RR

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|---|---|---|---|---|---|
| | | F | Sig. | t | df |
| CD31pos | Equal variances assumed | .013 | .909 | 1.077 | 69 |
| | Equal variances not assumed | | | 1.072 | 66.075 |
| CD31pos51pos | Equal variances assumed | 1.338 | .251 | .343 | 69 |
| | Equal variances not assumed | | | .347 | 68.986 |
| CD31pos51pos_54pos | Equal variances assumed | 2.560 | .114 | -1.388 | 69 |
| | Equal variances not assumed | | | -1.423 | 66.068 |
| CD31neg54pos | Equal variances assumed | .564 | .455 | -1.085 | 69 |
| | Equal variances not assumed | | | -1.103 | 68.448 |
| CD31neg51pos | Equal variances assumed | .146 | .704 | 1.154 | 69 |
| | Equal variances not assumed | | | 1.151 | 66.976 |
| CD31neg51pos_54pos | Equal variances assumed | .132 | .717 | -.099 | 69 |
| | Equal variances not assumed | | | -.095 | 47.020 |
| CD31neg54pos2 | Equal variances assumed | .037 | .848 | -.696 | 69 |
| | Equal variances not assumed | | | -.699 | 68.669 |

. Differences in HC vs. RR

**Independent Samples Test**

| | | t-test for Equality of Means | | |
|---|---|---|---|---|
| | | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| CD31pos | Equal variances assumed | .285 | 3.06615 | 2.84718 |
| | Equal variances not assumed | .288 | 3.06615 | 2.86097 |
| CD31pos51pos | Equal variances assumed | .732 | .36004 | 1.04830 |
| | Equal variances not assumed | .729 | .36004 | 1.03667 |
| CD31pos51pos_54pos | Equal variances assumed | .170 | -1.14013 | .82152 |
| | Equal variances not assumed | .160 | -1.14013 | .80145 |
| CD31neg54pos | Equal variances assumed | .282 | -1.73115 | 1.59523 |
| | Equal variances not assumed | .274 | -1.73115 | 1.56926 |
| CD31neg51pos | Equal variances assumed | .253 | .34572 | .29971 |
| | Equal variances not assumed | .254 | .34572 | .30037 |
| CD31neg51pos_54pos | Equal variances assumed | .922 | -.02957 | .29991 |
| | Equal variances not assumed | .925 | -.02957 | .31223 |
| CD31neg54pos2 | Equal variances assumed | .489 | -.19580 | .28149 |
| | Equal variances not assumed | .487 | -.19580 | .28001 |

**Independent Samples Test**

| | | t-test for Equality of Means | |
|---|---|---|---|
| | | 95% Confidence Interval of the Difference | |
| | | Lower | Upper |
| CD31pos | Equal variances assumed | -2.61381 | 8.74611 |
| | Equal variances not assumed | -2.64583 | 8.77813 |
| CD31pos51pos | Equal variances assumed | -1.73126 | 2.45134 |
| | Equal variances not assumed | -1.70806 | 2.42814 |
| CD31pos51pos_54pos | Equal variances assumed | -2.77901 | .49875 |
| | Equal variances not assumed | -2.74025 | .46000 |
| CD31neg54pos | Equal variances assumed | -4.91355 | 1.45126 |
| | Equal variances not assumed | -4.86219 | 1.39989 |
| CD31neg51pos | Equal variances assumed | -.25219 | .94363 |
| | Equal variances not assumed | -.25383 | .94526 |
| CD31neg51pos_54pos | Equal variances assumed | -.62787 | .56873 |
| | Equal variances not assumed | -.65770 | .59856 |
| CD31neg54pos2 | Equal variances assumed | -.75736 | .36576 |
| | Equal variances not assumed | -.75446 | .36286 |

## NPar Tests

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d sample size with CD31 data.sav
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## Mann-Whitney Test

. Differences in HC vs. RR

**Ranks**

| | Type of disease course and not-disease groups | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| CD31pos | Adult non-familial NC | 33 | 39.27 | 1296.00 |
| | RR | 38 | 33.16 | 1260.00 |
| | Total | 71 | | |
| CD31pos51pos | Adult non-familial NC | 33 | 38.70 | 1277.00 |
| | RR | 38 | 33.66 | 1279.00 |
| | Total | 71 | | |
| CD31pos51pos_54pos | Adult non-familial NC | 33 | 31.97 | 1055.00 |
| | RR | 38 | 39.50 | 1501.00 |
| | Total | 71 | | |
| CD31neg54pos | Adult non-familial NC | 33 | 33.05 | 1090.50 |
| | RR | 38 | 38.57 | 1465.50 |
| | Total | 71 | | |
| CD31neg51pos | Adult non-familial NC | 33 | 39.47 | 1302.50 |
| | RR | 38 | 32.99 | 1253.50 |
| | Total | 71 | | |
| CD31neg51pos_54pos | Adult non-familial NC | 33 | 32.62 | 1076.50 |
| | RR | 38 | 38.93 | 1479.50 |
| | Total | 71 | | |
| CD31neg54pos2 | Adult non-familial NC | 33 | 33.91 | 1119.00 |
| | RR | 38 | 37.82 | 1437.00 |
| | Total | 71 | | |

**Test Statistics[a]**

| | CD31pos | CD31pos51pos | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Mann-Whitney U | 519.000 | 538.000 | 494.000 | 529.500 | 512.500 |
| Wilcoxon W | 1260.000 | 1279.000 | 1055.000 | 1090.500 | 1253.500 |
| Z | -1.245 | -1.026 | -1.533 | -1.124 | -1.320 |
| Asymp. Sig. (2-tailed) | .213 | .305 | .125 | .261 | .187 |

a. Grouping Variable: Type of disease course and not-disease groups

. Differences in HC vs. RR

**Test Statistics**[a]

| | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|
| Mann-Whitney U | 515.500 | 558.000 |
| Wilcoxon W | 1076.500 | 1119.000 |
| Z | -1.286 | -.795 |
| Asymp. Sig. (2-tailed) | .198 | .426 |

a. Grouping Variable: Type of disease course and not-disease groups

# T-Test

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Group Statistics**

| | Type of disease course and not-disease groups | N | Mean |
|---|---|---|---|
| CD31pos | Adult non-familial NC | 33 | 72.6627 |
| | SP | 14 | 66.7679 |
| CD31pos51pos | Adult non-familial NC | 33 | 8.4103 |
| | SP | 14 | 7.3586 |
| CD31pos51pos_54pos | Adult non-familial NC | 33 | 2.4530 |
| | SP | 14 | 2.2057 |
| CD31neg54pos | Adult non-familial NC | 33 | 10.6273 |
| | SP | 14 | 10.5400 |
| CD31neg51pos | Adult non-familial NC | 33 | 2.8655 |
| | SP | 14 | 2.6443 |
| CD31neg51pos_54pos | Adult non-familial NC | 33 | .6173 |
| | SP | 14 | .3914 |
| CD31neg54pos2 | Adult non-familial NC | 33 | 2.1739 |
| | SP | 14 | 2.7307 |

**Group Statistics**

| | Type of disease course and not-disease groups | Std. Deviation | Std. Error Mean |
|---|---|---|---|
| CD31pos | Adult non-familial NC | 12.39394 | 2.15751 |
| | SP | 13.96155 | 3.73138 |
| CD31pos51pos | Adult non-familial NC | 4.02415 | .70052 |
| | SP | 3.72212 | .99478 |
| CD31pos51pos_54pos | Adult non-familial NC | 2.75748 | .48002 |
| | SP | 2.17489 | .58126 |
| CD31neg54pos | Adult non-familial NC | 5.83520 | 1.01578 |
| | SP | 6.10130 | 1.63064 |
| CD31neg51pos | Adult non-familial NC | 1.28019 | .22285 |
| | SP | 1.51876 | .40591 |
| CD31neg51pos_54pos | Adult non-familial NC | 1.60902 | .28009 |
| | SP | .55815 | .14917 |
| CD31neg54pos2 | Adult non-familial NC | 1.13558 | .19768 |
| | SP | 1.82251 | .48709 |

. Differences in HC vs. SP

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|---|---|---|---|---|---|
| | | F | Sig. | t | df |
| CD31pos | Equal variances assumed | .001 | .979 | 1.436 | 45 |
| | Equal variances not assumed | | | 1.368 | 22.140 |
| CD31pos51pos | Equal variances assumed | .002 | .969 | .837 | 45 |
| | Equal variances not assumed | | | .864 | 26.448 |
| CD31pos51pos_54pos | Equal variances assumed | .097 | .756 | .298 | 45 |
| | Equal variances not assumed | | | .328 | 30.933 |
| CD31neg54pos | Equal variances assumed | .001 | .981 | .046 | 45 |
| | Equal variances not assumed | | | .045 | 23.603 |
| CD31neg51pos | Equal variances assumed | .226 | .637 | .512 | 45 |
| | Equal variances not assumed | | | .478 | 21.234 |
| CD31neg51pos_54pos | Equal variances assumed | .553 | .461 | .510 | 45 |
| | Equal variances not assumed | | | .712 | 44.012 |
| CD31neg54pos2 | Equal variances assumed | 1.861 | .179 | -1.274 | 45 |
| | Equal variances not assumed | | | -1.059 | 17.443 |

. Differences in HC vs. SP

**Independent Samples Test**

| | | t-test for Equality of Means | | |
|---|---|---|---|---|
| | | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| CD31pos | Equal variances assumed | .158 | 5.89487 | 4.10380 |
| | Equal variances not assumed | .185 | 5.89487 | 4.31023 |
| CD31pos51pos | Equal variances assumed | .407 | 1.05173 | 1.25645 |
| | Equal variances not assumed | .395 | 1.05173 | 1.21668 |
| CD31pos51pos_54pos | Equal variances assumed | .767 | .24732 | .83011 |
| | Equal variances not assumed | .745 | .24732 | .75385 |
| CD31neg54pos | Equal variances assumed | .963 | .08727 | 1.88607 |
| | Equal variances not assumed | .964 | .08727 | 1.92114 |
| CD31neg51pos | Equal variances assumed | .611 | .22117 | .43168 |
| | Equal variances not assumed | .638 | .22117 | .46306 |
| CD31neg51pos_54pos | Equal variances assumed | .613 | .22584 | .44322 |
| | Equal variances not assumed | .480 | .22584 | .31734 |
| CD31neg54pos2 | Equal variances assumed | .209 | -.55677 | .43693 |
| | Equal variances not assumed | .304 | -.55677 | .52567 |

**Independent Samples Test**

| | | t-test for Equality of Means | |
|---|---|---|---|
| | | 95% Confidence Interval of the Difference | |
| | | Lower | Upper |
| CD31pos | Equal variances assumed | -2.37061 | 14.16035 |
| | Equal variances not assumed | -3.04071 | 14.83045 |
| CD31pos51pos | Equal variances assumed | -1.47889 | 3.58235 |
| | Equal variances not assumed | -1.44713 | 3.55059 |
| CD31pos51pos_54pos | Equal variances assumed | -1.42461 | 1.91925 |
| | Equal variances not assumed | -1.29030 | 1.78493 |
| CD31neg54pos | Equal variances assumed | -3.71147 | 3.88601 |
| | Equal variances not assumed | -3.88131 | 4.05585 |
| CD31neg51pos | Equal variances assumed | -.64829 | 1.09062 |
| | Equal variances not assumed | -.74117 | 1.18350 |
| CD31neg51pos_54pos | Equal variances assumed | -.66685 | 1.11854 |
| | Equal variances not assumed | -.41371 | .86540 |
| CD31neg54pos2 | Equal variances assumed | -1.43679 | .32324 |
| | Equal variances not assumed | -1.66370 | .55015 |

## NPar Tests

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d sample size with CD31 data.sav
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## Mann-Whitney Test

. Differences in HC vs. SP

**Ranks**

| | Type of disease course and not-disease groups | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| CD31pos | Adult non-familial NC | 33 | 25.65 | 846.50 |
| | SP | 14 | 20.11 | 281.50 |
| | Total | 47 | | |
| CD31pos51pos | Adult non-familial NC | 33 | 25.33 | 836.00 |
| | SP | 14 | 20.86 | 292.00 |
| | Total | 47 | | |
| CD31pos51pos_54pos | Adult non-familial NC | 33 | 24.03 | 793.00 |
| | SP | 14 | 23.93 | 335.00 |
| | Total | 47 | | |
| CD31neg54pos | Adult non-familial NC | 33 | 24.11 | 795.50 |
| | SP | 14 | 23.75 | 332.50 |
| | Total | 47 | | |
| CD31neg51pos | Adult non-familial NC | 33 | 25.36 | 837.00 |
| | SP | 14 | 20.79 | 291.00 |
| | Total | 47 | | |
| CD31neg51pos_54pos | Adult non-familial NC | 33 | 24.12 | 796.00 |
| | SP | 14 | 23.71 | 332.00 |
| | Total | 47 | | |
| CD31neg54pos2 | Adult non-familial NC | 33 | 22.79 | 752.00 |
| | SP | 14 | 26.86 | 376.00 |
| | Total | 47 | | |

**Test Statistics[a]**

| | CD31pos | CD31pos51pos | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Mann-Whitney U | 176.500 | 187.000 | 230.000 | 227.500 | 186.000 |
| Wilcoxon W | 281.500 | 292.000 | 335.000 | 332.500 | 291.000 |
| Z | -1.268 | -1.024 | -.023 | -.081 | -1.047 |
| Asymp. Sig. (2-tailed) | .205 | .306 | .981 | .935 | .295 |

a. Grouping Variable: Type of disease course and not-disease groups

. Differences in HC vs. SP

**Test Statistics**[a]

| | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|
| Mann-Whitney U | 227.000 | 191.000 |
| Wilcoxon W | 332.000 | 752.000 |
| Z | -.093 | -.930 |
| Asymp. Sig. (2-tailed) | .926 | .352 |

a. Grouping Variable: Type of disease course and not-disease groups

# T-Test

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Group Statistics**

| | Type of disease course and not-⋯ | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| CD31pos | RR | 38 | 69.5966 | 11.58234 | 1.87890 |
| | SP | 14 | 66.7679 | 13.96155 | 3.73138 |
| CD31pos51pos | RR | 38 | 8.0503 | 4.71066 | .76417 |
| | SP | 14 | 7.3586 | 3.72212 | .99478 |
| CD31pos51pos_54pos | RR | 38 | 3.5932 | 3.95635 | .64181 |
| | SP | 14 | 2.2057 | 2.17489 | .58126 |
| CD31neg54pos | RR | 38 | 12.3584 | 7.37356 | 1.19615 |
| | SP | 14 | 10.5400 | 6.10130 | 1.63064 |
| CD31neg51pos | RR | 38 | 2.5197 | 1.24147 | .20139 |
| | SP | 14 | 2.6443 | 1.51876 | .40591 |
| CD31neg51pos_54pos | RR | 38 | .6468 | .85054 | .13798 |
| | SP | 14 | .3914 | .55815 | .14917 |
| CD31neg54pos2 | RR | 38 | 2.3697 | 1.22253 | .19832 |
| | SP | 14 | 2.7307 | 1.82251 | .48709 |

. Differences in RR vs. SP

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|---|---|---|---|---|---|
| | | F | Sig. | t | df |
| CD31pos | Equal variances assumed | .003 | .959 | .739 | 50 |
| | Equal variances not assumed | | | .677 | 19.977 |
| CD31pos51pos | Equal variances assumed | .773 | .383 | .494 | 50 |
| | Equal variances not assumed | | | .551 | 29.286 |
| CD31pos51pos_54pos | Equal variances assumed | 2.072 | .156 | 1.240 | 50 |
| | Equal variances not assumed | | | 1.602 | 42.057 |
| CD31neg54pos | Equal variances assumed | .263 | .610 | .823 | 50 |
| | Equal variances not assumed | | | .899 | 27.915 |
| CD31neg51pos | Equal variances assumed | .071 | .790 | -.302 | 50 |
| | Equal variances not assumed | | | -.275 | 19.767 |
| CD31neg51pos_54pos | Equal variances assumed | 1.174 | .284 | 1.041 | 50 |
| | Equal variances not assumed | | | 1.257 | 35.603 |
| CD31neg54pos2 | Equal variances assumed | 1.470 | .231 | -.823 | 50 |
| | Equal variances not assumed | | | -.686 | 17.499 |

**Independent Samples Test**

| | | t-test for Equality of Means | | |
|---|---|---|---|---|
| | | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| CD31pos | Equal variances assumed | .463 | 2.82872 | 3.82844 |
| | Equal variances not assumed | .506 | 2.82872 | 4.17774 |
| CD31pos51pos | Equal variances assumed | .623 | .69169 | 1.39897 |
| | Equal variances not assumed | .586 | .69169 | 1.25441 |
| CD31pos51pos_54pos | Equal variances assumed | .221 | 1.38744 | 1.11910 |
| | Equal variances not assumed | .117 | 1.38744 | .86590 |
| CD31neg54pos | Equal variances assumed | .414 | 1.81842 | 2.20876 |
| | Equal variances not assumed | .376 | 1.81842 | 2.02232 |
| CD31neg51pos | Equal variances assumed | .764 | -.12455 | .41243 |
| | Equal variances not assumed | .786 | -.12455 | .45312 |
| CD31neg51pos_54pos | Equal variances assumed | .303 | .25541 | .24544 |
| | Equal variances not assumed | .217 | .25541 | .20320 |
| CD31neg54pos2 | Equal variances assumed | .415 | -.36098 | .43877 |
| | Equal variances not assumed | .501 | -.36098 | .52591 |

**Independent Samples Test**

| | | t-test for Equality of Means | |
|---|---|---|---|
| | | 95% Confidence Interval of the Difference | |
| | | Lower | Upper |
| CD31pos | Equal variances assumed | -4.86093 | 10.51837 |
| | Equal variances not assumed | -5.88653 | 11.54398 |
| CD31pos51pos | Equal variances assumed | -2.11823 | 3.50161 |
| | Equal variances not assumed | -1.87277 | 3.25616 |
| CD31pos51pos_54pos | Equal variances assumed | -.86033 | 3.63522 |
| | Equal variances not assumed | -.35994 | 3.13483 |
| CD31neg54pos | Equal variances assumed | -2.61801 | 6.25485 |
| | Equal variances not assumed | -2.32468 | 5.96152 |
| CD31neg51pos | Equal variances assumed | -.95294 | .70384 |
| | Equal variances not assumed | -1.07046 | .82136 |
| CD31neg51pos_54pos | Equal variances assumed | -.23758 | .74840 |
| | Equal variances not assumed | -.15685 | .66768 |
| CD31neg54pos2 | Equal variances assumed | -1.24227 | .52031 |
| | Equal variances not assumed | -1.46815 | .74620 |

## NPar Tests

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d sample size with CD31 data.sav
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## Mann-Whitney Test

. Differences in RR vs. SP

**Ranks**

| | Type of disease … | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| CD31pos | RR | 38 | 26.92 | 1023.00 |
| | SP | 14 | 25.36 | 355.00 |
| | Total | 52 | | |
| CD31pos51pos | RR | 38 | 26.83 | 1019.50 |
| | SP | 14 | 25.61 | 358.50 |
| | Total | 52 | | |
| CD31pos51pos_54pos | RR | 38 | 28.08 | 1067.00 |
| | SP | 14 | 22.21 | 311.00 |
| | Total | 52 | | |
| CD31neg54pos | RR | 38 | 27.71 | 1053.00 |
| | SP | 14 | 23.21 | 325.00 |
| | Total | 52 | | |
| CD31neg51pos | RR | 38 | 26.29 | 999.00 |
| | SP | 14 | 27.07 | 379.00 |
| | Total | 52 | | |
| CD31neg51pos_54pos | RR | 38 | 28.09 | 1067.50 |
| | SP | 14 | 22.18 | 310.50 |
| | Total | 52 | | |
| CD31neg54pos2 | RR | 38 | 25.97 | 987.00 |
| | SP | 14 | 27.93 | 391.00 |
| | Total | 52 | | |

**Test Statistics[a]**

| | CD31pos | CD31pos51pos | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Mann-Whitney U | 250.000 | 253.500 | 206.000 | 220.000 | 258.000 |
| Wilcoxon W | 355.000 | 358.500 | 311.000 | 325.000 | 999.000 |
| Z | -.330 | -.258 | -1.238 | -.949 | -.165 |
| Asymp. Sig. (2-tailed) | .741 | .797 | .216 | .343 | .869 |

a. Grouping Variable: Type of disease course and not-disease groups

. Differences in RR vs. SP

**Test Statistics[a]**

| | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|
| Mann-Whitney U | 205.500 | 246.000 |
| Wilcoxon W | 310.500 | 987.000 |
| Z | -1.249 | -.413 |
| Asymp. Sig. (2-tailed) | .212 | .680 |

a. Grouping Variable: Type of disease course and not-disease groups

## T-Test

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Group Statistics**

| | Abnormal Doppler? | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| CD31pos | No | 43 | 71.4502 | 11.61895 | 1.77187 |
| | Yes | 42 | 69.1650 | 13.07558 | 2.01761 |
| CD31pos51pos | No | 43 | 8.0233 | 3.71392 | .56637 |
| | Yes | 42 | 8.1302 | 4.81540 | .74303 |
| CD31pos51pos_54pos | No | 43 | 2.8079 | 3.49538 | .53304 |
| | Yes | 42 | 3.0388 | 3.12833 | .48271 |
| CD31neg54pos | No | 43 | 11.4286 | 6.68213 | 1.01902 |
| | Yes | 42 | 11.3440 | 6.57907 | 1.01517 |
| CD31neg51pos | No | 43 | 2.8619 | 1.29547 | .19756 |
| | Yes | 42 | 2.4826 | 1.28823 | .19878 |
| CD31neg51pos_54pos | No | 43 | .6651 | 1.44043 | .21966 |
| | Yes | 42 | .5198 | .80802 | .12468 |
| CD31neg54pos2 | No | 43 | 2.4774 | 1.56610 | .23883 |
| | Yes | 42 | 2.2260 | .96846 | .14944 |

. Differences in CCSVI vs. no-CCSVI (all subjects)

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|---|---|---|---|---|---|
| | | F | Sig. | t | df |
| CD31pos | Equal variances assumed | .770 | .383 | .852 | 83 |
| | Equal variances not assumed | | | .851 | 81.377 |
| CD31pos51pos | Equal variances assumed | 1.798 | .184 | -.115 | 83 |
| | Equal variances not assumed | | | -.115 | 77.082 |
| CD31pos51pos_54pos | Equal variances assumed | .101 | .752 | -.321 | 83 |
| | Equal variances not assumed | | | -.321 | 82.379 |
| CD31neg54pos | Equal variances assumed | .098 | .755 | .059 | 83 |
| | Equal variances not assumed | | | .059 | 82.994 |
| CD31neg51pos | Equal variances assumed | .125 | .725 | 1.353 | 83 |
| | Equal variances not assumed | | | 1.353 | 82.972 |
| CD31neg51pos_54pos | Equal variances assumed | .497 | .483 | .572 | 83 |
| | Equal variances not assumed | | | .575 | 66.365 |
| CD31neg54pos2 | Equal variances assumed | 4.061 | .047 | .888 | 83 |
| | Equal variances not assumed | | | .893 | 70.288 |

. Differences in CCSVI vs. no-CCSVI (all subjects)

**Independent Samples Test**

| | | t-test for Equality of Means | | |
|---|---|---|---|---|
| | | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| CD31pos | Equal variances assumed | .397 | 2.28523 | 2.68144 |
| | Equal variances not assumed | .397 | 2.28523 | 2.68519 |
| CD31pos51pos | Equal variances assumed | .909 | -.10698 | .93145 |
| | Equal variances not assumed | .909 | -.10698 | .93427 |
| CD31pos51pos_54pos | Equal variances assumed | .749 | -.23090 | .72007 |
| | Equal variances not assumed | .749 | -.23090 | .71913 |
| CD31neg54pos | Equal variances assumed | .953 | .08456 | 1.43866 |
| | Equal variances not assumed | .953 | .08456 | 1.43839 |
| CD31neg51pos | Equal variances assumed | .180 | .37924 | .28027 |
| | Equal variances not assumed | .180 | .37924 | .28025 |
| CD31neg51pos_54pos | Equal variances assumed | .569 | .14535 | .25415 |
| | Equal variances not assumed | .567 | .14535 | .25258 |
| CD31neg54pos2 | Equal variances assumed | .377 | .25149 | .28323 |
| | Equal variances not assumed | .375 | .25149 | .28173 |

**Independent Samples Test**

| | | t-test for Equality of Means | |
|---|---|---|---|
| | | 95% Confidence Interval of the Difference | |
| | | Lower | Upper |
| CD31pos | Equal variances assumed | -3.04804 | 7.61851 |
| | Equal variances not assumed | -3.05709 | 7.62755 |
| CD31pos51pos | Equal variances assumed | -1.95960 | 1.74564 |
| | Equal variances not assumed | -1.96733 | 1.75336 |
| CD31pos51pos_54pos | Equal variances assumed | -1.66310 | 1.20129 |
| | Equal variances not assumed | -1.66137 | 1.19957 |
| CD31neg54pos | Equal variances assumed | -2.77687 | 2.94599 |
| | Equal variances not assumed | -2.77635 | 2.94546 |
| CD31neg51pos | Equal variances assumed | -.17821 | .93669 |
| | Equal variances not assumed | -.17817 | .93666 |
| CD31neg51pos_54pos | Equal variances assumed | -.36015 | .65086 |
| | Equal variances not assumed | -.35889 | .64960 |
| CD31neg54pos2 | Equal variances assumed | -.31184 | .81482 |
| | Equal variances not assumed | -.31036 | .81334 |

## NPar Tests

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d sample size with CD31 data.sav
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## Mann-Whitney Test

. Differences in CCSVI vs. no-CCSVI (all subjects)

**Ranks**

| | Abnormal Doppler? | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| CD31pos | No | 43 | 45.05 | 1937.00 |
| | Yes | 42 | 40.90 | 1718.00 |
| | Total | 85 | | |
| CD31pos51pos | No | 43 | 44.64 | 1919.50 |
| | Yes | 42 | 41.32 | 1735.50 |
| | Total | 85 | | |
| CD31pos51pos_54pos | No | 43 | 39.86 | 1714.00 |
| | Yes | 42 | 46.21 | 1941.00 |
| | Total | 85 | | |
| CD31neg54pos | No | 43 | 43.59 | 1874.50 |
| | Yes | 42 | 42.39 | 1780.50 |
| | Total | 85 | | |
| CD31neg51pos | No | 43 | 46.79 | 2012.00 |
| | Yes | 42 | 39.12 | 1643.00 |
| | Total | 85 | | |
| CD31neg51pos_54pos | No | 43 | 44.41 | 1909.50 |
| | Yes | 42 | 41.56 | 1745.50 |
| | Total | 85 | | |
| CD31neg54pos2 | No | 43 | 44.79 | 1926.00 |
| | Yes | 42 | 41.17 | 1729.00 |
| | Total | 85 | | |

**Test Statistics[a]**

| | CD31pos | CD31pos51pos | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Mann-Whitney U | 815.000 | 832.500 | 768.000 | 877.500 | 740.000 |
| Wilcoxon W | 1718.000 | 1735.500 | 1714.000 | 1780.500 | 1643.000 |
| Z | -.774 | -.620 | -1.187 | -.224 | -1.433 |
| Asymp. Sig. (2-tailed) | .439 | .535 | .235 | .823 | .152 |

a. Grouping Variable: Abnormal Doppler?

. Differences in CCSVI vs. no-CCSVI (all subjects)

**Test Statistics**[a]

| | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|
| Mann-Whitney U | 842.500 | 826.000 |
| Wilcoxon W | 1745.500 | 1729.000 |
| Z | -.532 | -.677 |
| Asymp. Sig. (2-tailed) | .595 | .499 |

a. Grouping Variable: Abnormal Doppler?

# T-Test

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Group Statistics**

| | Abnormal Doppler? | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| CD31pos | No | 25 | 72.5780 | 11.84152 | 2.36830 |
| | Yes | 8 | 72.9275 | 14.87785 | 5.26012 |
| CD31pos51pos | No | 25 | 8.2356 | 3.81873 | .76375 |
| | Yes | 8 | 8.9562 | 4.85606 | 1.71688 |
| CD31pos51pos_54pos | No | 25 | 2.2176 | 2.83833 | .56767 |
| | Yes | 8 | 3.1888 | 2.51438 | .88897 |
| CD31neg54pos | No | 25 | 10.1720 | 5.66668 | 1.13334 |
| | Yes | 8 | 12.0500 | 6.51963 | 2.30504 |
| CD31neg51pos | No | 25 | 2.9188 | 1.35841 | .27168 |
| | Yes | 8 | 2.6987 | 1.05994 | .37474 |
| CD31neg51pos_54pos | No | 25 | .7452 | 1.83356 | .36671 |
| | Yes | 8 | .2175 | .25960 | .09178 |
| CD31neg54pos2 | No | 25 | 2.2596 | 1.21841 | .24368 |
| | Yes | 8 | 1.9063 | .83500 | .29522 |

. Differences in CCSVI vs. no-CCSVI (HC)

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|---|---|---|---|---|---|
| | | F | Sig. | t | df |
| CD31pos | Equal variances assumed | 1.307 | .262 | -.068 | 31 |
| | Equal variances not assumed | | | -.061 | 10.006 |
| CD31pos51pos | Equal variances assumed | .010 | .921 | -.435 | 31 |
| | Equal variances not assumed | | | -.384 | 9.931 |
| CD31pos51pos_54pos | Equal variances assumed | .077 | .783 | -.864 | 31 |
| | Equal variances not assumed | | | -.921 | 13.231 |
| CD31neg54pos | Equal variances assumed | 1.464 | .235 | -.788 | 31 |
| | Equal variances not assumed | | | -.731 | 10.613 |
| CD31neg51pos | Equal variances assumed | .488 | .490 | .418 | 31 |
| | Equal variances not assumed | | | .475 | 15.077 |
| CD31neg51pos_54pos | Equal variances assumed | 1.012 | .322 | .803 | 31 |
| | Equal variances not assumed | | | 1.396 | 26.741 |
| CD31neg54pos2 | Equal variances assumed | 1.154 | .291 | .761 | 31 |
| | Equal variances not assumed | | | .923 | 17.428 |

. Differences in CCSVI vs. no-CCSVI (HC)

**Independent Samples Test**

| | | t-test for Equality of Means | | |
|---|---|---|---|---|
| | | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| CD31pos | Equal variances assumed | .946 | -.34950 | 5.11461 |
| | Equal variances not assumed | .953 | -.34950 | 5.76868 |
| CD31pos51pos | Equal variances assumed | .666 | -.72065 | 1.65572 |
| | Equal variances not assumed | .709 | -.72065 | 1.87909 |
| CD31pos51pos_54pos | Equal variances assumed | .394 | -.97115 | 1.12457 |
| | Equal variances not assumed | .374 | -.97115 | 1.05476 |
| CD31neg54pos | Equal variances assumed | .437 | -1.87800 | 2.38446 |
| | Equal variances not assumed | .481 | -1.87800 | 2.56859 |
| CD31neg51pos | Equal variances assumed | .679 | .22005 | .52686 |
| | Equal variances not assumed | .641 | .22005 | .46287 |
| CD31neg51pos_54pos | Equal variances assumed | .428 | .52770 | .65724 |
| | Equal variances not assumed | .174 | .52770 | .37802 |
| CD31neg54pos2 | Equal variances assumed | .452 | .35335 | .46434 |
| | Equal variances not assumed | .369 | .35335 | .38280 |

**Independent Samples Test**

| | | t-test for Equality of Means | |
|---|---|---|---|
| | | 95% Confidence Interval of the Difference | |
| | | Lower | Upper |
| CD31pos | Equal variances assumed | -10.78082 | 10.08182 |
| | Equal variances not assumed | -13.20192 | 12.50292 |
| CD31pos51pos | Equal variances assumed | -4.09752 | 2.65622 |
| | Equal variances not assumed | -4.91146 | 3.47016 |
| CD31pos51pos_54pos | Equal variances assumed | -3.26472 | 1.32242 |
| | Equal variances not assumed | -3.24577 | 1.30347 |
| CD31neg54pos | Equal variances assumed | -6.74113 | 2.98513 |
| | Equal variances not assumed | -7.55670 | 3.80070 |
| CD31neg51pos | Equal variances assumed | -.85448 | 1.29458 |
| | Equal variances not assumed | -.76608 | 1.20618 |
| CD31neg51pos_54pos | Equal variances assumed | -.81276 | 1.86816 |
| | Equal variances not assumed | -.24829 | 1.30369 |
| CD31neg54pos2 | Equal variances assumed | -.59368 | 1.30038 |
| | Equal variances not assumed | -.45277 | 1.15947 |

## NPar Tests

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d sample size with CD31 data.sav
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## Mann-Whitney Test

. Differences in CCSVI vs. no-CCSVI (HC)

**Ranks**

| | Abnormal Doppler? | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| CD31pos | No | 25 | 16.64 | 416.00 |
| | Yes | 8 | 18.13 | 145.00 |
| | Total | 33 | | |
| CD31pos51pos | No | 25 | 16.80 | 420.00 |
| | Yes | 8 | 17.63 | 141.00 |
| | Total | 33 | | |
| CD31pos51pos_54pos | No | 25 | 15.92 | 398.00 |
| | Yes | 8 | 20.38 | 163.00 |
| | Total | 33 | | |
| CD31neg54pos | No | 25 | 16.32 | 408.00 |
| | Yes | 8 | 19.13 | 153.00 |
| | Total | 33 | | |
| CD31neg51pos | No | 25 | 16.54 | 413.50 |
| | Yes | 8 | 18.44 | 147.50 |
| | Total | 33 | | |
| CD31neg51pos_54pos | No | 25 | 18.24 | 456.00 |
| | Yes | 8 | 13.13 | 105.00 |
| | Total | 33 | | |
| CD31neg54pos2 | No | 25 | 17.72 | 443.00 |
| | Yes | 8 | 14.75 | 118.00 |
| | Total | 33 | | |

**Test Statistics[b]**

| | CD31pos | CD31pos51pos | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Mann-Whitney U | 91.000 | 95.000 | 73.000 | 83.000 | 88.500 |
| Wilcoxon W | 416.000 | 420.000 | 398.000 | 408.000 | 413.500 |
| Z | -.378 | -.210 | -1.134 | -.714 | -.483 |
| Asymp. Sig. (2-tailed) | .705 | .834 | .257 | .475 | .629 |
| Exact Sig. [2*(1-tailed Sig.)] | .726[a] | .853[a] | .272[a] | .496[a] | .636[a] |

a. Not corrected for ties.

b. Grouping Variable: Abnormal Doppler?

. Differences in CCSVI vs. no-CCSVI (HC)

**Test Statistics**[b]

| | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|
| Mann-Whitney U | 69.000 | 82.000 |
| Wilcoxon W | 105.000 | 118.000 |
| Z | -1.304 | -.756 |
| Asymp. Sig. (2-tailed) | .192 | .450 |
| Exact Sig. [2*(1-tailed Sig.)] | .204[a] | .470[a] |

a. Not corrected for ties.

b. Grouping Variable: Abnormal Doppler?

# T-Test

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Group Statistics**

| | Abnormal Doppler? | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| CD31pos | No | 18 | 69.8839 | 11.44994 | 2.69878 |
| | Yes | 34 | 68.2797 | 12.69747 | 2.17760 |
| CD31pos51pos | No | 18 | 7.7283 | 3.65123 | .86060 |
| | Yes | 34 | 7.9359 | 4.85829 | .83319 |
| CD31pos51pos_54pos | No | 18 | 3.6278 | 4.19372 | .98847 |
| | Yes | 34 | 3.0035 | 3.28802 | .56389 |
| CD31neg54pos | No | 18 | 13.1739 | 7.70929 | 1.81710 |
| | Yes | 34 | 11.1779 | 6.67920 | 1.14547 |
| CD31neg51pos | No | 18 | 2.7828 | 1.23683 | .29152 |
| | Yes | 34 | 2.4318 | 1.34519 | .23070 |
| CD31neg51pos_54pos | No | 18 | .5539 | .59774 | .14089 |
| | Yes | 34 | .5909 | .87722 | .15044 |
| CD31neg54pos2 | No | 18 | 2.7800 | 1.94860 | .45929 |
| | Yes | 34 | 2.3012 | .99337 | .17036 |

. Differences in CCSVI vs. no-CCSVI (MS)

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|---|---|---|---|---|---|
| | | F | Sig. | t | df |
| CD31pos | Equal variances assumed | .053 | .819 | .448 | 50 |
| | Equal variances not assumed | | | .463 | 38.036 |
| CD31pos51pos | Equal variances assumed | 2.181 | .146 | -.159 | 50 |
| | Equal variances not assumed | | | -.173 | 43.924 |
| CD31pos51pos_54pos | Equal variances assumed | 1.199 | .279 | .591 | 50 |
| | Equal variances not assumed | | | .549 | 28.320 |
| CD31neg54pos | Equal variances assumed | .373 | .544 | .972 | 50 |
| | Equal variances not assumed | | | .929 | 30.698 |
| CD31neg51pos | Equal variances assumed | .098 | .755 | .920 | 50 |
| | Equal variances not assumed | | | .944 | 37.403 |
| CD31neg51pos_54pos | Equal variances assumed | .179 | .674 | -.160 | 50 |
| | Equal variances not assumed | | | -.179 | 46.635 |
| CD31neg54pos2 | Equal variances assumed | 3.365 | .073 | 1.179 | 50 |
| | Equal variances not assumed | | | .977 | 21.787 |

**Independent Samples Test**

| | | t-test for Equality of Means | | |
|---|---|---|---|---|
| | | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| CD31pos | Equal variances assumed | .656 | 1.60418 | 3.58171 |
| | Equal variances not assumed | .646 | 1.60418 | 3.46776 |
| CD31pos51pos | Equal variances assumed | .874 | -.20755 | 1.30719 |
| | Equal variances not assumed | .863 | -.20755 | 1.19785 |
| CD31pos51pos_54pos | Equal variances assumed | .557 | .62425 | 1.05563 |
| | Equal variances not assumed | .588 | .62425 | 1.13800 |
| CD31neg54pos | Equal variances assumed | .336 | 1.99595 | 2.05395 |
| | Equal variances not assumed | .360 | 1.99595 | 2.14801 |
| CD31neg51pos | Equal variances assumed | .362 | .35101 | .38167 |
| | Equal variances not assumed | .351 | .35101 | .37176 |
| CD31neg51pos_54pos | Equal variances assumed | .874 | -.03699 | .23125 |
| | Equal variances not assumed | .858 | -.03699 | .20611 |
| CD31neg54pos2 | Equal variances assumed | .244 | .47882 | .40624 |
| | Equal variances not assumed | .339 | .47882 | .48987 |

**Independent Samples Test**

| | | t-test for Equality of Means | |
|---|---|---|---|
| | | 95% Confidence Interval of the Difference | |
| | | Lower | Upper |
| CD31pos | Equal variances assumed | -5.58990 | 8.79826 |
| | Equal variances not assumed | -5.41570 | 8.62407 |
| CD31pos51pos | Equal variances assumed | -2.83312 | 2.41802 |
| | Equal variances not assumed | -2.62177 | 2.20667 |
| CD31pos51pos_54pos | Equal variances assumed | -1.49604 | 2.74454 |
| | Equal variances not assumed | -1.70565 | 2.95415 |
| CD31neg54pos | Equal variances assumed | -2.12953 | 6.12143 |
| | Equal variances not assumed | -2.38669 | 6.37859 |
| CD31neg51pos | Equal variances assumed | -.41559 | 1.11761 |
| | Equal variances not assumed | -.40198 | 1.10400 |
| CD31neg51pos_54pos | Equal variances assumed | -.50147 | .42748 |
| | Equal variances not assumed | -.45172 | .37774 |
| CD31neg54pos2 | Equal variances assumed | -.33713 | 1.29478 |
| | Equal variances not assumed | -.53768 | 1.49532 |

## NPar Tests

```
[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduce
d sample size with CD31 data.sav
```

## Mann-Whitney Test

. Differences in CCSVI vs. no-CCSVI (MS)

**Ranks**

| | Abnormal Doppler? | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| CD31pos | No | 18 | 27.89 | 502.00 |
| | Yes | 34 | 25.76 | 876.00 |
| | Total | 52 | | |
| CD31pos51pos | No | 18 | 27.58 | 496.50 |
| | Yes | 34 | 25.93 | 881.50 |
| | Total | 52 | | |
| CD31pos51pos_54pos | No | 18 | 26.25 | 472.50 |
| | Yes | 34 | 26.63 | 905.50 |
| | Total | 52 | | |
| CD31neg54pos | No | 18 | 30.56 | 550.00 |
| | Yes | 34 | 24.35 | 828.00 |
| | Total | 52 | | |
| CD31neg51pos | No | 18 | 29.97 | 539.50 |
| | Yes | 34 | 24.66 | 838.50 |
| | Total | 52 | | |
| CD31neg51pos_54pos | No | 18 | 27.28 | 491.00 |
| | Yes | 34 | 26.09 | 887.00 |
| | Total | 52 | | |
| CD31neg54pos2 | No | 18 | 29.25 | 526.50 |
| | Yes | 34 | 25.04 | 851.50 |
| | Total | 52 | | |

**Test Statistics[a]**

| | CD31pos | CD31pos51pos | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Mann-Whitney U | 281.000 | 286.500 | 301.500 | 233.000 | 243.500 |
| Wilcoxon W | 876.000 | 881.500 | 472.500 | 828.000 | 838.500 |
| Z | -.481 | -.375 | -.087 | -1.404 | -1.202 |
| Asymp. Sig. (2-tailed) | .631 | .708 | .931 | .160 | .229 |

a. Grouping Variable: Abnormal Doppler?

. Differences in CCSVI vs. no-CCSVI (MS)

**Test Statistics**[a]

| | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|
| Mann-Whitney U | 292.000 | 256.500 |
| Wilcoxon W | 887.000 | 851.500 |
| Z | -.269 | -.952 |
| Asymp. Sig. (2-tailed) | .788 | .341 |

a. Grouping Variable: Abnormal Doppler?

# T-Test

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Group Statistics**

| | Abnormal Doppler? | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| CD31pos | No | 15 | 69.0640 | 12.03642 | 3.10779 |
| | Yes | 23 | 69.9439 | 11.53707 | 2.40565 |
| CD31pos51pos | No | 15 | 7.7253 | 3.92207 | 1.01267 |
| | Yes | 23 | 8.2622 | 5.23566 | 1.09171 |
| CD31pos51pos_54pos | No | 15 | 3.9580 | 4.48374 | 1.15770 |
| | Yes | 23 | 3.3552 | 3.65810 | .76277 |
| CD31neg54pos | No | 15 | 14.0260 | 7.91410 | 2.04341 |
| | Yes | 23 | 11.2709 | 6.96058 | 1.45138 |
| CD31neg51pos | No | 15 | 2.7773 | 1.32826 | .34296 |
| | Yes | 23 | 2.3517 | 1.18094 | .24624 |
| CD31neg51pos_54pos | No | 15 | .4960 | .46099 | .11903 |
| | Yes | 23 | .7452 | 1.02752 | .21425 |
| CD31neg54pos2 | No | 15 | 2.5680 | 1.57519 | .40671 |
| | Yes | 23 | 2.2404 | .94359 | .19675 |

. Differences in CCSVI vs. no-CCSVI (RRMS)

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|---|---|---|---|---|---|
| | | F | Sig. | t | df |
| CD31pos | Equal variances assumed | .130 | .720 | -.226 | 36 |
| | Equal variances not assumed | | | -.224 | 29.145 |
| CD31pos51pos | Equal variances assumed | 1.775 | .191 | -.339 | 36 |
| | Equal variances not assumed | | | -.361 | 35.198 |
| CD31pos51pos_54pos | Equal variances assumed | 1.213 | .278 | .454 | 36 |
| | Equal variances not assumed | | | .435 | 25.710 |
| CD31neg54pos | Equal variances assumed | .406 | .528 | 1.130 | 36 |
| | Equal variances not assumed | | | 1.099 | 27.272 |
| CD31neg51pos | Equal variances assumed | 1.404 | .244 | 1.034 | 36 |
| | Equal variances not assumed | | | 1.008 | 27.504 |
| CD31neg51pos_54pos | Equal variances assumed | 2.304 | .138 | -.880 | 36 |
| | Equal variances not assumed | | | -1.017 | 32.770 |
| CD31neg54pos2 | Equal variances assumed | 1.555 | .220 | .803 | 36 |
| | Equal variances not assumed | | | .725 | 20.602 |

. Differences in CCSVI vs. no-CCSVI (RRMS)

**Independent Samples Test**

| | | t-test for Equality of Means | | |
|---|---|---|---|---|
| | | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| CD31pos | Equal variances assumed | .823 | -.87991 | 3.89422 |
| | Equal variances not assumed | .824 | -.87991 | 3.93008 |
| CD31pos51pos | Equal variances assumed | .736 | -.53684 | 1.58241 |
| | Equal variances not assumed | .721 | -.53684 | 1.48907 |
| CD31pos51pos_54pos | Equal variances assumed | .652 | .60278 | 1.32735 |
| | Equal variances not assumed | .667 | .60278 | 1.38639 |
| CD31neg54pos | Equal variances assumed | .266 | 2.75513 | 2.43803 |
| | Equal variances not assumed | .281 | 2.75513 | 2.50640 |
| CD31neg51pos | Equal variances assumed | .308 | .42559 | .41164 |
| | Equal variances not assumed | .322 | .42559 | .42220 |
| CD31neg51pos_54pos | Equal variances assumed | .385 | -.24922 | .28314 |
| | Equal variances not assumed | .317 | -.24922 | .24510 |
| CD31neg54pos2 | Equal variances assumed | .427 | .32757 | .40769 |
| | Equal variances not assumed | .477 | .32757 | .45180 |

**Independent Samples Test**

| | | t-test for Equality of Means | |
|---|---|---|---|
| | | 95% Confidence Interval of the Difference | |
| | | Lower | Upper |
| CD31pos | Equal variances assumed | -8.77776 | 7.01793 |
| | Equal variances not assumed | -8.91609 | 7.15626 |
| CD31pos51pos | Equal variances assumed | -3.74612 | 2.67244 |
| | Equal variances not assumed | -3.55921 | 2.48553 |
| CD31pos51pos_54pos | Equal variances assumed | -2.08921 | 3.29478 |
| | Equal variances not assumed | -2.24855 | 3.45411 |
| CD31neg54pos | Equal variances assumed | -2.18943 | 7.69969 |
| | Equal variances not assumed | -2.38518 | 7.89544 |
| CD31neg51pos | Equal variances assumed | -.40924 | 1.26043 |
| | Equal variances not assumed | -.43995 | 1.29114 |
| CD31neg51pos_54pos | Equal variances assumed | -.82346 | .32502 |
| | Equal variances not assumed | -.74800 | .24957 |
| CD31neg54pos2 | Equal variances assumed | -.49927 | 1.15440 |
| | Equal variances not assumed | -.61312 | 1.26825 |

## NPar Tests

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d sample size with CD31 data.sav
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## Mann-Whitney Test

. Differences in CCSVI vs. no-CCSVI (RRMS)

**Ranks**

| | Abnormal Doppler? | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| CD31pos | No | 15 | 19.33 | 290.00 |
| | Yes | 23 | 19.61 | 451.00 |
| | Total | 38 | | |
| CD31pos51pos | No | 15 | 19.53 | 293.00 |
| | Yes | 23 | 19.48 | 448.00 |
| | Total | 38 | | |
| CD31pos51pos_54pos | No | 15 | 19.17 | 287.50 |
| | Yes | 23 | 19.72 | 453.50 |
| | Total | 38 | | |
| CD31neg54pos | No | 15 | 23.67 | 355.00 |
| | Yes | 23 | 16.78 | 386.00 |
| | Total | 38 | | |
| CD31neg51pos | No | 15 | 21.60 | 324.00 |
| | Yes | 23 | 18.13 | 417.00 |
| | Total | 38 | | |
| CD31neg51pos_54pos | No | 15 | 19.10 | 286.50 |
| | Yes | 23 | 19.76 | 454.50 |
| | Total | 38 | | |
| CD31neg54pos2 | No | 15 | 21.60 | 324.00 |
| | Yes | 23 | 18.13 | 417.00 |
| | Total | 38 | | |

**Test Statistics[b]**

| | CD31pos | CD31pos51pos | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Mann-Whitney U | 170.000 | 172.000 | 167.500 | 110.000 | 141.000 |
| Wilcoxon W | 290.000 | 448.000 | 287.500 | 386.000 | 417.000 |
| Z | -.075 | -.015 | -.149 | -1.867 | -.941 |
| Asymp. Sig. (2-tailed) | .940 | .988 | .881 | .062 | .347 |
| Exact Sig. [2*(1-tailed Sig.)] | .953[a] | 1.000[a] | .883[a] | .064[a] | .359[a] |

a. Not corrected for ties.

b. Grouping Variable: Abnormal Doppler?

. Differences in CCSVI vs. no-CCSVI (RRMS)

**Test Statistics**[b]

| | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|
| Mann-Whitney U | 166.500 | 141.000 |
| Wilcoxon W | 286.500 | 417.000 |
| Z | -.179 | -.941 |
| Asymp. Sig. (2-tailed) | .858 | .347 |
| Exact Sig. [2*(1-tailed Sig.)] | .860[a] | .359[a] |

a. Not corrected for ties.

b. Grouping Variable: Abnormal Doppler?

# T-Test

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Group Statistics**

| | Abnormal Doppler? | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| CD31pos | No | 15 | 69.0640 | 12.03642 | 3.10779 |
| | Yes | 23 | 69.9439 | 11.53707 | 2.40565 |
| CD31pos51pos | No | 15 | 7.7253 | 3.92207 | 1.01267 |
| | Yes | 23 | 8.2622 | 5.23566 | 1.09171 |
| CD31pos51pos_54pos | No | 15 | 3.9580 | 4.48374 | 1.15770 |
| | Yes | 23 | 3.3552 | 3.65810 | .76277 |
| CD31neg54pos | No | 15 | 14.0260 | 7.91410 | 2.04341 |
| | Yes | 23 | 11.2709 | 6.96058 | 1.45138 |
| CD31neg51pos | No | 15 | 2.7773 | 1.32826 | .34296 |
| | Yes | 23 | 2.3517 | 1.18094 | .24624 |
| CD31neg51pos_54pos | No | 15 | .4960 | .46099 | .11903 |
| | Yes | 23 | .7452 | 1.02752 | .21425 |
| CD31neg54pos2 | No | 15 | 2.5680 | 1.57519 | .40671 |
| | Yes | 23 | 2.2404 | .94359 | .19675 |

. Differences in CCSVI vs. no-CCSVI (SPMS)

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|---|---|---|---|---|---|
| | | F | Sig. | t | df |
| CD31pos | Equal variances assumed | .130 | .720 | -.226 | 36 |
| | Equal variances not assumed | | | -.224 | 29.145 |
| CD31pos51pos | Equal variances assumed | 1.775 | .191 | -.339 | 36 |
| | Equal variances not assumed | | | -.361 | 35.198 |
| CD31pos51pos_54pos | Equal variances assumed | 1.213 | .278 | .454 | 36 |
| | Equal variances not assumed | | | .435 | 25.710 |
| CD31neg54pos | Equal variances assumed | .406 | .528 | 1.130 | 36 |
| | Equal variances not assumed | | | 1.099 | 27.272 |
| CD31neg51pos | Equal variances assumed | 1.404 | .244 | 1.034 | 36 |
| | Equal variances not assumed | | | 1.008 | 27.504 |
| CD31neg51pos_54pos | Equal variances assumed | 2.304 | .138 | -.880 | 36 |
| | Equal variances not assumed | | | -1.017 | 32.770 |
| CD31neg54pos2 | Equal variances assumed | 1.555 | .220 | .803 | 36 |
| | Equal variances not assumed | | | .725 | 20.602 |

**Independent Samples Test**

| | | t-test for Equality of Means | | |
|---|---|---|---|---|
| | | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| CD31pos | Equal variances assumed | .823 | -.87991 | 3.89422 |
| | Equal variances not assumed | .824 | -.87991 | 3.93008 |
| CD31pos51pos | Equal variances assumed | .736 | -.53684 | 1.58241 |
| | Equal variances not assumed | .721 | -.53684 | 1.48907 |
| CD31pos51pos_54pos | Equal variances assumed | .652 | .60278 | 1.32735 |
| | Equal variances not assumed | .667 | .60278 | 1.38639 |
| CD31neg54pos | Equal variances assumed | .266 | 2.75513 | 2.43803 |
| | Equal variances not assumed | .281 | 2.75513 | 2.50640 |
| CD31neg51pos | Equal variances assumed | .308 | .42559 | .41164 |
| | Equal variances not assumed | .322 | .42559 | .42220 |
| CD31neg51pos_54pos | Equal variances assumed | .385 | -.24922 | .28314 |
| | Equal variances not assumed | .317 | -.24922 | .24510 |
| CD31neg54pos2 | Equal variances assumed | .427 | .32757 | .40769 |
| | Equal variances not assumed | .477 | .32757 | .45180 |

**Independent Samples Test**

| | | t-test for Equality of Means | |
|---|---|---|---|
| | | 95% Confidence Interval of the Difference | |
| | | Lower | Upper |
| CD31pos | Equal variances assumed | -8.77776 | 7.01793 |
| | Equal variances not assumed | -8.91609 | 7.15626 |
| CD31pos51pos | Equal variances assumed | -3.74612 | 2.67244 |
| | Equal variances not assumed | -3.55921 | 2.48553 |
| CD31pos51pos_54pos | Equal variances assumed | -2.08921 | 3.29478 |
| | Equal variances not assumed | -2.24855 | 3.45411 |
| CD31neg54pos | Equal variances assumed | -2.18943 | 7.69969 |
| | Equal variances not assumed | -2.38518 | 7.89544 |
| CD31neg51pos | Equal variances assumed | -.40924 | 1.26043 |
| | Equal variances not assumed | -.43995 | 1.29114 |
| CD31neg51pos_54pos | Equal variances assumed | -.82346 | .32502 |
| | Equal variances not assumed | -.74800 | .24957 |
| CD31neg54pos2 | Equal variances assumed | -.49927 | 1.15440 |
| | Equal variances not assumed | -.61312 | 1.26825 |

## NPar Tests

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[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduce
d sample size with CD31 data.sav
```

## Mann-Whitney Test

. Differences in CCSVI vs. no-CCSVI (SPMS)

**Ranks**

| | Abnormal Doppler? | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| CD31pos | No | 15 | 19.33 | 290.00 |
| | Yes | 23 | 19.61 | 451.00 |
| | Total | 38 | | |
| CD31pos51pos | No | 15 | 19.53 | 293.00 |
| | Yes | 23 | 19.48 | 448.00 |
| | Total | 38 | | |
| CD31pos51pos_54pos | No | 15 | 19.17 | 287.50 |
| | Yes | 23 | 19.72 | 453.50 |
| | Total | 38 | | |
| CD31neg54pos | No | 15 | 23.67 | 355.00 |
| | Yes | 23 | 16.78 | 386.00 |
| | Total | 38 | | |
| CD31neg51pos | No | 15 | 21.60 | 324.00 |
| | Yes | 23 | 18.13 | 417.00 |
| | Total | 38 | | |
| CD31neg51pos_54pos | No | 15 | 19.10 | 286.50 |
| | Yes | 23 | 19.76 | 454.50 |
| | Total | 38 | | |
| CD31neg54pos2 | No | 15 | 21.60 | 324.00 |
| | Yes | 23 | 18.13 | 417.00 |
| | Total | 38 | | |

**Test Statistics[b]**

| | CD31pos | CD31pos51pos | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Mann-Whitney U | 170.000 | 172.000 | 167.500 | 110.000 | 141.000 |
| Wilcoxon W | 290.000 | 448.000 | 287.500 | 386.000 | 417.000 |
| Z | -.075 | -.015 | -.149 | -1.867 | -.941 |
| Asymp. Sig. (2-tailed) | .940 | .988 | .881 | .062 | .347 |
| Exact Sig. [2*(1-tailed Sig.)] | .953[a] | 1.000[a] | .883[a] | .064[a] | .359[a] |

a. Not corrected for ties.

b. Grouping Variable: Abnormal Doppler?

. Differences in CCSVI vs. no-CCSVI (SPMS)

**Test Statistics**[b]

| | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|
| Mann-Whitney U | 166.500 | 141.000 |
| Wilcoxon W | 286.500 | 417.000 |
| Z | -.179 | -.941 |
| Asymp. Sig. (2-tailed) | .858 | .347 |
| Exact Sig. [2*(1-tailed Sig.)] | .860[a] | .359[a] |

a. Not corrected for ties.

b. Grouping Variable: Abnormal Doppler?

. Correlation between VHISS (CCSVI severity) in all subjects

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | Venous haemodynamic insufficiency severity score | CD31pos | CD31pos51pos |
|---|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | 1.000 | -.056 | -.100 |
| | | Sig. (2-tailed) | . | .613 | .361 |
| | | N | 85 | 85 | 85 |
| | CD31pos | Correlation Coefficient | -.056 | 1.000 | -.013 |
| | | Sig. (2-tailed) | .613 | . | .907 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | -.100 | -.013 | 1.000 |
| | | Sig. (2-tailed) | .361 | .907 | . |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | .054 | -.132 | .490** |
| | | Sig. (2-tailed) | .621 | .228 | .000 |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | -.055 | -.018 | -.126 |
| | | Sig. (2-tailed) | .620 | .869 | .251 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | -.146 | .060 | .508** |
| | | Sig. (2-tailed) | .183 | .584 | .000 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.004 | -.092 | .299** |
| | | Sig. (2-tailed) | .970 | .403 | .005 |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | -.018 | .010 | .071 |
| | | Sig. (2-tailed) | .873 | .930 | .516 |
| | | N | 85 | 85 | 85 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between VHISS (CCSVI severity) in all subjects

**Correlations**

| | | | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | .054 | -.055 | -.146 |
| | | Sig. (2-tailed) | .621 | .620 | .183 |
| | | N | 85 | 85 | 85 |
| | CD31pos | Correlation Coefficient | -.132 | -.018 | .060 |
| | | Sig. (2-tailed) | .228 | .869 | .584 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | .490** | -.126 | .508** |
| | | Sig. (2-tailed) | .000 | .251 | .000 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | 1.000 | .559** | .302** |
| | | Sig. (2-tailed) | . | .000 | .005 |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | .559** | 1.000 | .062 |
| | | Sig. (2-tailed) | .000 | . | .572 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | .302** | .062 | 1.000 |
| | | Sig. (2-tailed) | .005 | .572 | . |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | .489** | .177 | .394** |
| | | Sig. (2-tailed) | .000 | .104 | .000 |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | .132 | .212 | .325** |
| | | Sig. (2-tailed) | .230 | .051 | .002 |
| | | N | 85 | 85 | 85 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between VHISS (CCSVI severity) in all subjects

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | -.004 | -.018 |
| | | Sig. (2-tailed) | .970 | .873 |
| | | N | 85 | 85 |
| | CD31pos | Correlation Coefficient | -.092 | .010 |
| | | Sig. (2-tailed) | .403 | .930 |
| | | N | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | .299** | .071 |
| | | Sig. (2-tailed) | .005 | .516 |
| | | N | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | .489** | .132 |
| | | Sig. (2-tailed) | .000 | .230 |
| | | N | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | .177 | .212 |
| | | Sig. (2-tailed) | .104 | .051 |
| | | N | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | .394** | .325** |
| | | Sig. (2-tailed) | .000 | .002 |
| | | N | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | 1.000 | .482** |
| | | Sig. (2-tailed) | . | .000 |
| | | N | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | .482** | 1.000 |
| | | Sig. (2-tailed) | .000 | . |
| | | N | 85 | 85 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between VHISS (CCSVI severity) in HC

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | Venous haemodynamic insufficiency severity score | CD31pos | CD31pos51pos |
|---|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | 1.000 | -.079 | -.114 |
| | | Sig. (2-tailed) | . | .662 | .529 |
| | | N | 33 | 33 | 33 |
| | CD31pos | Correlation Coefficient | -.079 | 1.000 | -.019 |
| | | Sig. (2-tailed) | .662 | . | .916 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | -.114 | -.019 | 1.000 |
| | | Sig. (2-tailed) | .529 | .916 | . |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | .094 | -.243 | .353* |
| | | Sig. (2-tailed) | .602 | .173 | .044 |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | .099 | -.220 | -.317 |
| | | Sig. (2-tailed) | .585 | .219 | .072 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | .082 | -.046 | .394* |
| | | Sig. (2-tailed) | .649 | .798 | .023 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.080 | -.091 | .268 |
| | | Sig. (2-tailed) | .657 | .613 | .132 |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | -.072 | -.162 | .119 |
| | | Sig. (2-tailed) | .692 | .366 | .510 |
| | | N | 33 | 33 | 33 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between VHISS (CCSVI severity) in HC

**Correlations**

| | | | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | .094 | .099 | .082 |
| | | Sig. (2-tailed) | .602 | .585 | .649 |
| | | N | 33 | 33 | 33 |
| | CD31pos | Correlation Coefficient | -.243 | -.220 | -.046 |
| | | Sig. (2-tailed) | .173 | .219 | .798 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | .353* | -.317 | .394* |
| | | Sig. (2-tailed) | .044 | .072 | .023 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | 1.000 | .563** | .181 |
| | | Sig. (2-tailed) | . | .001 | .313 |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | .563** | 1.000 | -.056 |
| | | Sig. (2-tailed) | .001 | . | .756 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | .181 | -.056 | 1.000 |
| | | Sig. (2-tailed) | .313 | .756 | . |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | .294 | -.097 | .320 |
| | | Sig. (2-tailed) | .097 | .591 | .069 |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | .007 | -.094 | .368* |
| | | Sig. (2-tailed) | .971 | .604 | .035 |
| | | N | 33 | 33 | 33 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between VHISS (CCSVI severity) in HC

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | -.080 | -.072 |
| | | Sig. (2-tailed) | .657 | .692 |
| | | N | 33 | 33 |
| | CD31pos | Correlation Coefficient | -.091 | -.162 |
| | | Sig. (2-tailed) | .613 | .366 |
| | | N | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | .268 | .119 |
| | | Sig. (2-tailed) | .132 | .510 |
| | | N | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | .294 | .007 |
| | | Sig. (2-tailed) | .097 | .971 |
| | | N | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | -.097 | -.094 |
| | | Sig. (2-tailed) | .591 | .604 |
| | | N | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | .320 | .368* |
| | | Sig. (2-tailed) | .069 | .035 |
| | | N | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | 1.000 | .536** |
| | | Sig. (2-tailed) | . | .001 |
| | | N | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | .536** | 1.000 |
| | | Sig. (2-tailed) | .001 | . |
| | | N | 33 | 33 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | Venous haemodynamic insufficiency severity score | CD31pos | CD31pos51pos |
|---|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | 1.000 | .098 | -.065 |
| | | Sig. (2-tailed) | . | .487 | .645 |
| | | N | 52 | 52 | 52 |
| | CD31pos | Correlation Coefficient | .098 | 1.000 | -.043 |
| | | Sig. (2-tailed) | .487 | . | .763 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | -.065 | -.043 | 1.000 |
| | | Sig. (2-tailed) | .645 | .763 | . |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.063 | -.016 | .604** |
| | | Sig. (2-tailed) | .655 | .910 | .000 |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | -.192 | .143 | .002 |
| | | Sig. (2-tailed) | .173 | .313 | .990 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | -.158 | .113 | .505** |
| | | Sig. (2-tailed) | .263 | .426 | .000 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.069 | -.044 | .349* |
| | | Sig. (2-tailed) | .625 | .758 | .011 |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | -.116 | .164 | .070 |
| | | Sig. (2-tailed) | .411 | .246 | .624 |
| | | N | 52 | 52 | 52 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between VHISS (CCSVI severity) in MS

**Correlations**

| | | | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | -.063 | -.192 | -.158 |
| | | Sig. (2-tailed) | .655 | .173 | .263 |
| | | N | 52 | 52 | 52 |
| | CD31pos | Correlation Coefficient | -.016 | .143 | .113 |
| | | Sig. (2-tailed) | .910 | .313 | .426 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | .604** | .002 | .505** |
| | | Sig. (2-tailed) | .000 | .990 | .000 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | 1.000 | .531** | .458** |
| | | Sig. (2-tailed) | . | .000 | .001 |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | .531** | 1.000 | .215 |
| | | Sig. (2-tailed) | .000 | . | .125 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | .458** | .215 | 1.000 |
| | | Sig. (2-tailed) | .001 | .125 | . |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | .632** | .358** | .487** |
| | | Sig. (2-tailed) | .000 | .009 | .000 |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | .237 | .392** | .381** |
| | | Sig. (2-tailed) | .091 | .004 | .005 |
| | | N | 52 | 52 | 52 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between VHISS (CCSVI severity) in MS

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | -.069 | -.116 |
| | | Sig. (2-tailed) | .625 | .411 |
| | | N | 52 | 52 |
| | CD31pos | Correlation Coefficient | -.044 | .164 |
| | | Sig. (2-tailed) | .758 | .246 |
| | | N | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | .349* | .070 |
| | | Sig. (2-tailed) | .011 | .624 |
| | | N | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | .632** | .237 |
| | | Sig. (2-tailed) | .000 | .091 |
| | | N | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | .358** | .392** |
| | | Sig. (2-tailed) | .009 | .004 |
| | | N | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | .487** | .381** |
| | | Sig. (2-tailed) | .000 | .005 |
| | | N | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | 1.000 | .448** |
| | | Sig. (2-tailed) | . | .001 |
| | | N | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | .448** | 1.000 |
| | | Sig. (2-tailed) | .001 | . |
| | | N | 52 | 52 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | Venous haemodynamic insufficiency severity score | CD31pos | CD31pos51pos |
|---|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | 1.000 | .131 | -.003 |
| | | Sig. (2-tailed) | . | .432 | .987 |
| | | N | 38 | 38 | 38 |
| | CD31pos | Correlation Coefficient | .131 | 1.000 | -.020 |
| | | Sig. (2-tailed) | .432 | . | .906 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | -.003 | -.020 | 1.000 |
| | | Sig. (2-tailed) | .987 | .906 | . |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.074 | .021 | .648** |
| | | Sig. (2-tailed) | .659 | .900 | .000 |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | -.312 | .139 | .055 |
| | | Sig. (2-tailed) | .057 | .406 | .744 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | -.092 | .144 | .457** |
| | | Sig. (2-tailed) | .583 | .387 | .004 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | .028 | .049 | .341* |
| | | Sig. (2-tailed) | .868 | .770 | .036 |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | -.097 | .277 | .012 |
| | | Sig. (2-tailed) | .562 | .093 | .941 |
| | | N | 38 | 38 | 38 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between VHISS (CCSVI severity) in RRMS

**Correlations**

| | | | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | -.074 | -.312 | -.092 |
| | | Sig. (2-tailed) | .659 | .057 | .583 |
| | | N | 38 | 38 | 38 |
| | CD31pos | Correlation Coefficient | .021 | .139 | .144 |
| | | Sig. (2-tailed) | .900 | .406 | .387 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | .648** | .055 | .457** |
| | | Sig. (2-tailed) | .000 | .744 | .004 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | 1.000 | .482** | .516** |
| | | Sig. (2-tailed) | . | .002 | .001 |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | .482** | 1.000 | .250 |
| | | Sig. (2-tailed) | .002 | . | .130 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | .516** | .250 | 1.000 |
| | | Sig. (2-tailed) | .001 | .130 | . |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | .687** | .359* | .522** |
| | | Sig. (2-tailed) | .000 | .027 | .001 |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | .129 | .316 | .350* |
| | | Sig. (2-tailed) | .440 | .053 | .031 |
| | | N | 38 | 38 | 38 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between VHISS (CCSVI severity) in RRMS

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | .028 | -.097 |
| | | Sig. (2-tailed) | .868 | .562 |
| | | N | 38 | 38 |
| | CD31pos | Correlation Coefficient | .049 | .277 |
| | | Sig. (2-tailed) | .770 | .093 |
| | | N | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | .341* | .012 |
| | | Sig. (2-tailed) | .036 | .941 |
| | | N | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | .687** | .129 |
| | | Sig. (2-tailed) | .000 | .440 |
| | | N | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | .359* | .316 |
| | | Sig. (2-tailed) | .027 | .053 |
| | | N | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | .522** | .350* |
| | | Sig. (2-tailed) | .001 | .031 |
| | | N | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | 1.000 | .332* |
| | | Sig. (2-tailed) | . | .042 |
| | | N | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | .332* | 1.000 |
| | | Sig. (2-tailed) | .042 | . |
| | | N | 38 | 38 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | Venous haemodynamic insufficiency severity score | CD31pos | CD31pos51pos |
|---|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | 1.000 | .095 | -.176 |
| | | Sig. (2-tailed) | . | .747 | .548 |
| | | N | 14 | 14 | 14 |
| | CD31pos | Correlation Coefficient | .095 | 1.000 | -.200 |
| | | Sig. (2-tailed) | .747 | . | .493 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | -.176 | -.200 | 1.000 |
| | | Sig. (2-tailed) | .548 | .493 | . |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | .099 | -.284 | .512 |
| | | Sig. (2-tailed) | .736 | .326 | .061 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | .169 | .055 | -.169 |
| | | Sig. (2-tailed) | .564 | .852 | .563 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | -.360 | .055 | .556* |
| | | Sig. (2-tailed) | .206 | .852 | .039 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.298 | -.503 | .398 |
| | | Sig. (2-tailed) | .301 | .067 | .159 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | -.351 | -.270 | .182 |
| | | Sig. (2-tailed) | .218 | .350 | .533 |
| | | N | 14 | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between VHISS (CCSVI severity) in SPMS

**Correlations**

| | | | CD31pos51pos_54pos | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | .099 | .169 | -.360 |
| | | Sig. (2-tailed) | .736 | .564 | .206 |
| | | N | 14 | 14 | 14 |
| | CD31pos | Correlation Coefficient | -.284 | .055 | .055 |
| | | Sig. (2-tailed) | .326 | .852 | .852 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | .512 | -.169 | .556* |
| | | Sig. (2-tailed) | .061 | .563 | .039 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | 1.000 | .587* | .363 |
| | | Sig. (2-tailed) | . | .027 | .203 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | .587* | 1.000 | .182 |
| | | Sig. (2-tailed) | .027 | . | .533 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .363 | .182 | 1.000 |
| | | Sig. (2-tailed) | .203 | .533 | . |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | .451 | .358 | .437 |
| | | Sig. (2-tailed) | .106 | .208 | .118 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | .565* | .578* | .407 |
| | | Sig. (2-tailed) | .035 | .030 | .149 |
| | | N | 14 | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between VHISS (CCSVI severity) in SPMS

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | Venous haemodynamic insufficiency severity score | Correlation Coefficient | -.298 | -.351 |
| | | Sig. (2-tailed) | .301 | .218 |
| | | N | 14 | 14 |
| | CD31pos | Correlation Coefficient | -.503 | -.270 |
| | | Sig. (2-tailed) | .067 | .350 |
| | | N | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | .398 | .182 |
| | | Sig. (2-tailed) | .159 | .533 |
| | | N | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | .451 | .565* |
| | | Sig. (2-tailed) | .106 | .035 |
| | | N | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | .358 | .578* |
| | | Sig. (2-tailed) | .208 | .030 |
| | | N | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .437 | .407 |
| | | Sig. (2-tailed) | .118 | .149 |
| | | N | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | 1.000 | .815** |
| | | Sig. (2-tailed) | . | .000 |
| | | N | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | .815** | 1.000 |
| | | Sig. (2-tailed) | .000 | . |
| | | N | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

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>be used.
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## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | 1.000 | -.013 | -.132 |
| | | Sig. (2-tailed) | . | .907 | .228 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | -.013 | 1.000 | .490** |
| | | Sig. (2-tailed) | .907 | . | .000 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.132 | .490** | 1.000 |
| | | Sig. (2-tailed) | .228 | .000 | . |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | -.018 | -.126 | .559** |
| | | Sig. (2-tailed) | .869 | .251 | .000 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | .060 | .508** | .302** |
| | | Sig. (2-tailed) | .584 | .000 | .005 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.092 | .299** | .489** |
| | | Sig. (2-tailed) | .403 | .005 | .000 |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | .010 | .071 | .132 |
| | | Sig. (2-tailed) | .930 | .516 | .230 |
| | | N | 85 | 85 | 85 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | -.117 | -.082 | .038 |
| | | Sig. (2-tailed) | .288 | .456 | .727 |
| | | N | 85 | 85 | 85 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between conventional MRI measures in all subje

**Correlations**

| | | | CD31neg54pos | CD31neg51pos | CD31neg51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | -.018 | .060 | -.092 |
| | | Sig. (2-tailed) | .869 | .584 | .403 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | -.126 | .508** | .299** |
| | | Sig. (2-tailed) | .251 | .000 | .005 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | .559** | .302** | .489** |
| | | Sig. (2-tailed) | .000 | .005 | .000 |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | 1.000 | .062 | .177 |
| | | Sig. (2-tailed) | . | .572 | .104 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | .062 | 1.000 | .394** |
| | | Sig. (2-tailed) | .572 | . | .000 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | .177 | .394** | 1.000 |
| | | Sig. (2-tailed) | .104 | .000 | . |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | .212 | .325** | .482** |
| | | Sig. (2-tailed) | .051 | .002 | .000 |
| | | N | 85 | 85 | 85 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .065 | -.060 | .084 |
| | | Sig. (2-tailed) | .557 | .586 | .446 |
| | | N | 85 | 85 | 85 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between conventional MRI measures in all subje

**Correlations**

| | | | CD31neg54pos2 | Volume of T2 hyperintense lesions in cubic millimetres | Volume of T1 hypointense lesions in cubic millimetres |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .010 | -.117 | -.063 |
| | | Sig. (2-tailed) | .930 | .288 | .669 |
| | | N | 85 | 85 | 49 |
| | CD31pos51pos | Correlation Coefficient | .071 | -.082 | .101 |
| | | Sig. (2-tailed) | .516 | .456 | .490 |
| | | N | 85 | 85 | 49 |
| | CD31pos51pos_54pos | Correlation Coefficient | .132 | .038 | .060 |
| | | Sig. (2-tailed) | .230 | .727 | .681 |
| | | N | 85 | 85 | 49 |
| | CD31neg54pos | Correlation Coefficient | .212 | .065 | .079 |
| | | Sig. (2-tailed) | .051 | .557 | .588 |
| | | N | 85 | 85 | 49 |
| | CD31neg51pos | Correlation Coefficient | .325** | -.060 | .282* |
| | | Sig. (2-tailed) | .002 | .586 | .050 |
| | | N | 85 | 85 | 49 |
| | CD31neg51pos_54pos | Correlation Coefficient | .482** | .084 | -.051 |
| | | Sig. (2-tailed) | .000 | .446 | .726 |
| | | N | 85 | 85 | 49 |
| | CD31neg54pos2 | Correlation Coefficient | 1.000 | .136 | -.013 |
| | | Sig. (2-tailed) | . | .215 | .931 |
| | | N | 85 | 85 | 49 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .136 | 1.000 | .801** |
| | | Sig. (2-tailed) | .215 | . | .000 |
| | | N | 85 | 85 | 49 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in all subje

**Correlations**

| | | | Volume of GAD enhancing lesions in cubic millimetres | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Sienax 2.5 with inpainting normalized Grey Matter Volume |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .125 | .050 | .011 |
| | | Sig. (2-tailed) | .391 | .648 | .922 |
| | | N | 49 | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | .095 | .134 | .047 |
| | | Sig. (2-tailed) | .518 | .221 | .670 |
| | | N | 49 | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | .151 | .092 | .013 |
| | | Sig. (2-tailed) | .300 | .400 | .905 |
| | | N | 49 | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | -.135 | .043 | .119 |
| | | Sig. (2-tailed) | .357 | .695 | .278 |
| | | N | 49 | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | -.045 | .089 | .232* |
| | | Sig. (2-tailed) | .758 | .416 | .033 |
| | | N | 49 | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | .152 | -.038 | .054 |
| | | Sig. (2-tailed) | .297 | .728 | .622 |
| | | N | 49 | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | -.045 | -.107 | .011 |
| | | Sig. (2-tailed) | .759 | .331 | .920 |
| | | N | 49 | 85 | 85 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .130 | -.345** | -.184 |
| | | Sig. (2-tailed) | .372 | .001 | .091 |
| | | N | 49 | 85 | 85 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in all subje

**Correlations**

| | | | Sienax 2.5 with inpainting normalized White Matter Volume | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Sienax 2.5 with inpainting normalized Neocortical Volume |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .032 | -.082 | .043 |
| | | Sig. (2-tailed) | .769 | .453 | .696 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | .157 | .083 | .063 |
| | | Sig. (2-tailed) | .152 | .450 | .565 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | .048 | -.054 | .010 |
| | | Sig. (2-tailed) | .661 | .622 | .930 |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | -.101 | -.087 | .045 |
| | | Sig. (2-tailed) | .356 | .428 | .683 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | -.049 | .117 | .227* |
| | | Sig. (2-tailed) | .658 | .287 | .037 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.073 | .037 | .062 |
| | | Sig. (2-tailed) | .504 | .739 | .571 |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | -.130 | .151 | .029 |
| | | Sig. (2-tailed) | .237 | .169 | .790 |
| | | N | 85 | 85 | 85 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | -.341** | .512** | -.244* |
| | | Sig. (2-tailed) | .001 | .000 | .025 |
| | | N | 85 | 85 | 85 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in all subje

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | -.063 | .101 | .060 |
| | | Sig. (2-tailed) | .669 | .490 | .681 |
| | | N | 49 | 49 | 49 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | .125 | .095 | .151 |
| | | Sig. (2-tailed) | .391 | .518 | .300 |
| | | N | 49 | 49 | 49 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .050 | .134 | .092 |
| | | Sig. (2-tailed) | .648 | .221 | .400 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | .011 | .047 | .013 |
| | | Sig. (2-tailed) | .922 | .670 | .905 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | .032 | .157 | .048 |
| | | Sig. (2-tailed) | .769 | .152 | .661 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.082 | .083 | -.054 |
| | | Sig. (2-tailed) | .453 | .450 | .622 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .043 | .063 | .010 |
| | | Sig. (2-tailed) | .696 | .565 | .930 |
| | | N | 85 | 85 | 85 |

. Correlation between conventional MRI measures in all subje

**Correlations**

| | | | CD31neg54pos | CD31neg51pos | CD31neg51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | .079 | .282* | -.051 |
| | | Sig. (2-tailed) | .588 | .050 | .726 |
| | | N | 49 | 49 | 49 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | -.135 | -.045 | .152 |
| | | Sig. (2-tailed) | .357 | .758 | .297 |
| | | N | 49 | 49 | 49 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .043 | .089 | -.038 |
| | | Sig. (2-tailed) | .695 | .416 | .728 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | .119 | .232* | .054 |
| | | Sig. (2-tailed) | .278 | .033 | .622 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | -.101 | -.049 | -.073 |
| | | Sig. (2-tailed) | .356 | .658 | .504 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.087 | .117 | .037 |
| | | Sig. (2-tailed) | .428 | .287 | .739 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .045 | .227* | .062 |
| | | Sig. (2-tailed) | .683 | .037 | .571 |
| | | N | 85 | 85 | 85 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in all subje

**Correlations**

| | | | CD31neg54pos2 | Volume of T2 hyperintense lesions in cubic millimetres | Volume of T1 hypointense lesions in cubic millimetres |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | -.013 | .801** | 1.000 |
| | | Sig. (2-tailed) | .931 | .000 | . |
| | | N | 49 | 49 | 49 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | -.045 | .130 | .045 |
| | | Sig. (2-tailed) | .759 | .372 | .756 |
| | | N | 49 | 49 | 49 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | -.107 | -.345** | -.252 |
| | | Sig. (2-tailed) | .331 | .001 | .080 |
| | | N | 85 | 85 | 49 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | .011 | -.184 | -.088 |
| | | Sig. (2-tailed) | .920 | .091 | .547 |
| | | N | 85 | 85 | 49 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | -.130 | -.341** | -.388** |
| | | Sig. (2-tailed) | .237 | .001 | .006 |
| | | N | 85 | 85 | 49 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | .151 | .512** | .594** |
| | | Sig. (2-tailed) | .169 | .000 | .000 |
| | | N | 85 | 85 | 49 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .029 | -.244* | -.163 |
| | | Sig. (2-tailed) | .790 | .025 | .264 |
| | | N | 85 | 85 | 49 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in all subje

**Correlations**

| | | | Volume of GAD enhancing lesions in cubic millimetres | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Sienax 2.5 with inpainting normalized Grey Matter Volume |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | .045 | -.252 | -.088 |
| | | Sig. (2-tailed) | .756 | .080 | .547 |
| | | N | 49 | 49 | 49 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | 1.000 | .083 | -.002 |
| | | Sig. (2-tailed) | . | .573 | .989 |
| | | N | 49 | 49 | 49 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .083 | 1.000 | .748** |
| | | Sig. (2-tailed) | .573 | . | .000 |
| | | N | 49 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.002 | .748** | 1.000 |
| | | Sig. (2-tailed) | .989 | .000 | . |
| | | N | 49 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | .198 | .626** | .046 |
| | | Sig. (2-tailed) | .173 | .000 | .677 |
| | | N | 49 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.097 | -.468** | -.264* |
| | | Sig. (2-tailed) | .508 | .000 | .015 |
| | | N | 49 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .076 | .809** | .945** |
| | | Sig. (2-tailed) | .605 | .000 | .000 |
| | | N | 49 | 85 | 85 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in all subje

**Correlations**

| | | | Sienax 2.5 with inpainting normalized White Matter Volume | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Sienax 2.5 with inpainting normalized Neocortical Volume |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | -.388** | .594** | -.163 |
| | | Sig. (2-tailed) | .006 | .000 | .264 |
| | | N | 49 | 49 | 49 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | .198 | -.097 | .076 |
| | | Sig. (2-tailed) | .173 | .508 | .605 |
| | | N | 49 | 49 | 49 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .626** | -.468** | .809** |
| | | Sig. (2-tailed) | .000 | .000 | .000 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | .046 | -.264* | .945** |
| | | Sig. (2-tailed) | .677 | .015 | .000 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | 1.000 | -.446** | .195 |
| | | Sig. (2-tailed) | . | .000 | .074 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.446** | 1.000 | -.356** |
| | | Sig. (2-tailed) | .000 | . | .001 |
| | | N | 85 | 85 | 85 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .195 | -.356** | 1.000 |
| | | Sig. (2-tailed) | .074 | .001 | . |
| | | N | 85 | 85 | 85 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | 1.000 | -.019 | -.243 |
| | | Sig. (2-tailed) | . | .916 | .173 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | -.019 | 1.000 | .353* |
| | | Sig. (2-tailed) | .916 | . | .044 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.243 | .353* | 1.000 |
| | | Sig. (2-tailed) | .173 | .044 | . |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | -.220 | -.317 | .563** |
| | | Sig. (2-tailed) | .219 | .072 | .001 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | -.046 | .394* | .181 |
| | | Sig. (2-tailed) | .798 | .023 | .313 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.091 | .268 | .294 |
| | | Sig. (2-tailed) | .613 | .132 | .097 |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | -.162 | .119 | .007 |
| | | Sig. (2-tailed) | .366 | .510 | .971 |
| | | N | 33 | 33 | 33 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .241 | -.304 | -.441* |
| | | Sig. (2-tailed) | .177 | .085 | .010 |
| | | N | 33 | 33 | 33 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between conventional MRI measures in HC

**Correlations**

| | | | CD31neg54pos | CD31neg51pos | CD31neg51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | -.220 | -.046 | -.091 |
| | | Sig. (2-tailed) | .219 | .798 | .613 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | -.317 | .394* | .268 |
| | | Sig. (2-tailed) | .072 | .023 | .132 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | .563** | .181 | .294 |
| | | Sig. (2-tailed) | .001 | .313 | .097 |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | 1.000 | -.056 | -.097 |
| | | Sig. (2-tailed) | . | .756 | .591 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | -.056 | 1.000 | .320 |
| | | Sig. (2-tailed) | .756 | . | .069 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.097 | .320 | 1.000 |
| | | Sig. (2-tailed) | .591 | .069 | . |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | -.094 | .368* | .536** |
| | | Sig. (2-tailed) | .604 | .035 | .001 |
| | | N | 33 | 33 | 33 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | -.176 | -.202 | -.112 |
| | | Sig. (2-tailed) | .326 | .260 | .536 |
| | | N | 33 | 33 | 33 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between conventional MRI measures in HC

**Correlations**

| | | | CD31neg54pos2 | Volume of T2 hyperintense lesions in cubic millimetres | Volume of T1 hypointense lesions in cubic millimetres |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | -.162 | .241 | . |
| | | Sig. (2-tailed) | .366 | .177 | . |
| | | N | 33 | 33 | 0 |
| | CD31pos51pos | Correlation Coefficient | .119 | -.304 | . |
| | | Sig. (2-tailed) | .510 | .085 | . |
| | | N | 33 | 33 | 0 |
| | CD31pos51pos_54pos | Correlation Coefficient | .007 | -.441* | . |
| | | Sig. (2-tailed) | .971 | .010 | . |
| | | N | 33 | 33 | 0 |
| | CD31neg54pos | Correlation Coefficient | -.094 | -.176 | . |
| | | Sig. (2-tailed) | .604 | .326 | . |
| | | N | 33 | 33 | 0 |
| | CD31neg51pos | Correlation Coefficient | .368* | -.202 | . |
| | | Sig. (2-tailed) | .035 | .260 | . |
| | | N | 33 | 33 | 0 |
| | CD31neg51pos_54pos | Correlation Coefficient | .536** | -.112 | . |
| | | Sig. (2-tailed) | .001 | .536 | . |
| | | N | 33 | 33 | 0 |
| | CD31neg54pos2 | Correlation Coefficient | 1.000 | .262 | . |
| | | Sig. (2-tailed) | . | .140 | . |
| | | N | 33 | 33 | 0 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .262 | 1.000 | . |
| | | Sig. (2-tailed) | .140 | . | . |
| | | N | 33 | 33 | 0 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between conventional MRI measures in HC

**Correlations**

| | | | Volume of GAD enhancing lesions in cubic millimetres | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Sienax 2.5 with inpainting normalized Grey Matter Volume |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | . | -.134 | -.106 |
| | | Sig. (2-tailed) | . | .456 | .559 |
| | | N | 0 | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | . | -.127 | -.139 |
| | | Sig. (2-tailed) | . | .480 | .440 |
| | | N | 0 | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | . | .045 | -.070 |
| | | Sig. (2-tailed) | . | .803 | .698 |
| | | N | 0 | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | . | .082 | -.015 |
| | | Sig. (2-tailed) | . | .651 | .935 |
| | | N | 0 | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | . | -.304 | -.081 |
| | | Sig. (2-tailed) | . | .085 | .653 |
| | | N | 0 | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | . | -.173 | -.034 |
| | | Sig. (2-tailed) | . | .334 | .853 |
| | | N | 0 | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | . | -.211 | -.012 |
| | | Sig. (2-tailed) | . | .238 | .947 |
| | | N | 0 | 33 | 33 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | . | .114 | .214 |
| | | Sig. (2-tailed) | . | .528 | .231 |
| | | N | 0 | 33 | 33 |

. Correlation between conventional MRI measures in HC

**Correlations**

| | | | Sienax 2.5 with inpainting normalized White Matter Volume | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Sienax 2.5 with inpainting normalized Neocortical Volume |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | -.204 | .161 | -.138 |
| | | Sig. (2-tailed) | .255 | .369 | .444 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | .042 | .222 | -.133 |
| | | Sig. (2-tailed) | .815 | .215 | .461 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | .159 | -.179 | -.089 |
| | | Sig. (2-tailed) | .376 | .318 | .624 |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | .125 | -.250 | -.038 |
| | | Sig. (2-tailed) | .489 | .161 | .835 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | -.261 | .397* | -.083 |
| | | Sig. (2-tailed) | .143 | .022 | .644 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.150 | .113 | .024 |
| | | Sig. (2-tailed) | .404 | .530 | .893 |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | -.234 | .246 | .012 |
| | | Sig. (2-tailed) | .190 | .167 | .948 |
| | | N | 33 | 33 | 33 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | -.203 | .207 | .209 |
| | | Sig. (2-tailed) | .258 | .248 | .243 |
| | | N | 33 | 33 | 33 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in HC

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 0 | 0 | 0 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 0 | 0 | 0 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | -.134 | -.127 | .045 |
| | | Sig. (2-tailed) | .456 | .480 | .803 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.106 | -.139 | -.070 |
| | | Sig. (2-tailed) | .559 | .440 | .698 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | -.204 | .042 | .159 |
| | | Sig. (2-tailed) | .255 | .815 | .376 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | .161 | .222 | -.179 |
| | | Sig. (2-tailed) | .369 | .215 | .318 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | -.138 | -.133 | -.089 |
| | | Sig. (2-tailed) | .444 | .461 | .624 |
| | | N | 33 | 33 | 33 |

. Correlation between conventional MRI measures in HC

**Correlations**

| | | | CD31neg54pos | CD31neg51pos | CD31neg51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 0 | 0 | 0 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 0 | 0 | 0 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .082 | -.304 | -.173 |
| | | Sig. (2-tailed) | .651 | .085 | .334 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.015 | -.081 | -.034 |
| | | Sig. (2-tailed) | .935 | .653 | .853 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | .125 | -.261 | -.150 |
| | | Sig. (2-tailed) | .489 | .143 | .404 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.250 | .397* | .113 |
| | | Sig. (2-tailed) | .161 | .022 | .530 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | -.038 | -.083 | .024 |
| | | Sig. (2-tailed) | .835 | .644 | .893 |
| | | N | 33 | 33 | 33 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in HC

**Correlations**

| | | | CD31neg54pos2 | Volume of T2 hyperintense lesions in cubic millimetres | Volume of T1 hypointense lesions in cubic millimetres |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 0 | 0 | 0 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 0 | 0 | 0 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | -.211 | .114 | . |
| | | Sig. (2-tailed) | .238 | .528 | . |
| | | N | 33 | 33 | 0 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.012 | .214 | . |
| | | Sig. (2-tailed) | .947 | .231 | . |
| | | N | 33 | 33 | 0 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | -.234 | -.203 | . |
| | | Sig. (2-tailed) | .190 | .258 | . |
| | | N | 33 | 33 | 0 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | .246 | .207 | . |
| | | Sig. (2-tailed) | .167 | .248 | . |
| | | N | 33 | 33 | 0 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .012 | .209 | . |
| | | Sig. (2-tailed) | .948 | .243 | . |
| | | N | 33 | 33 | 0 |

. Correlation between conventional MRI measures in HC

**Correlations**

| | | | Volume of GAD enhancing lesions in cubic millimetres | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Sienax 2.5 with inpainting normalized Grey Matter Volume |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 0 | 0 | 0 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 0 | 0 | 0 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | . | 1.000 | .754** |
| | | Sig. (2-tailed) | . | . | .000 |
| | | N | 0 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | . | .754** | 1.000 |
| | | Sig. (2-tailed) | . | .000 | . |
| | | N | 0 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | . | .528** | -.102 |
| | | Sig. (2-tailed) | . | .002 | .574 |
| | | N | 0 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | . | -.411* | -.152 |
| | | Sig. (2-tailed) | . | .018 | .397 |
| | | N | 0 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | . | .799** | .933** |
| | | Sig. (2-tailed) | . | .000 | .000 |
| | | N | 0 | 33 | 33 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between conventional MRI measures in HC

**Correlations**

| | | | Sienax 2.5 with inpainting normalized White Matter Volume | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Sienax 2.5 with inpainting normalized Neocortical Volume |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 0 | 0 | 0 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 0 | 0 | 0 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .528** | -.411* | .799** |
| | | Sig. (2-tailed) | .002 | .018 | .000 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.102 | -.152 | .933** |
| | | Sig. (2-tailed) | .574 | .397 | .000 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | 1.000 | -.398* | .047 |
| | | Sig. (2-tailed) | . | .022 | .793 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.398* | 1.000 | -.318 |
| | | Sig. (2-tailed) | .022 | . | .072 |
| | | N | 33 | 33 | 33 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .047 | -.318 | 1.000 |
| | | Sig. (2-tailed) | .793 | .072 | . |
| | | N | 33 | 33 | 33 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | 1.000 | -.043 | -.016 |
| | | Sig. (2-tailed) | . | .763 | .910 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | -.043 | 1.000 | .604** |
| | | Sig. (2-tailed) | .763 | . | .000 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.016 | .604** | 1.000 |
| | | Sig. (2-tailed) | .910 | .000 | . |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | .143 | .002 | .531** |
| | | Sig. (2-tailed) | .313 | .990 | .000 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | .113 | .505** | .458** |
| | | Sig. (2-tailed) | .426 | .000 | .001 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.044 | .349* | .632** |
| | | Sig. (2-tailed) | .758 | .011 | .000 |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | .164 | .070 | .237 |
| | | Sig. (2-tailed) | .246 | .624 | .091 |
| | | N | 52 | 52 | 52 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | -.125 | .130 | .140 |
| | | Sig. (2-tailed) | .378 | .358 | .322 |
| | | N | 52 | 52 | 52 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in MS

**Correlations**

| | | | CD31neg54pos | CD31neg51pos | CD31neg51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .143 | .113 | -.044 |
| | | Sig. (2-tailed) | .313 | .426 | .758 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | .002 | .505** | .349* |
| | | Sig. (2-tailed) | .990 | .000 | .011 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | .531** | .458** | .632** |
| | | Sig. (2-tailed) | .000 | .001 | .000 |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | 1.000 | .215 | .358** |
| | | Sig. (2-tailed) | . | .125 | .009 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | .215 | 1.000 | .487** |
| | | Sig. (2-tailed) | .125 | . | .000 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | .358** | .487** | 1.000 |
| | | Sig. (2-tailed) | .009 | .000 | . |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | .392** | .381** | .448** |
| | | Sig. (2-tailed) | .004 | .005 | .001 |
| | | N | 52 | 52 | 52 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .104 | .188 | .091 |
| | | Sig. (2-tailed) | .462 | .181 | .520 |
| | | N | 52 | 52 | 52 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in MS

**Correlations**

| | | | CD31neg54pos2 | Volume of T2 hyperintense lesions in cubic millimetres | Volume of T1 hypointense lesions in cubic millimetres |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .164 | -.125 | -.063 |
| | | Sig. (2-tailed) | .246 | .378 | .669 |
| | | N | 52 | 52 | 49 |
| | CD31pos51pos | Correlation Coefficient | .070 | .130 | .101 |
| | | Sig. (2-tailed) | .624 | .358 | .490 |
| | | N | 52 | 52 | 49 |
| | CD31pos51pos_54pos | Correlation Coefficient | .237 | .140 | .060 |
| | | Sig. (2-tailed) | .091 | .322 | .681 |
| | | N | 52 | 52 | 49 |
| | CD31neg54pos | Correlation Coefficient | .392** | .104 | .079 |
| | | Sig. (2-tailed) | .004 | .462 | .588 |
| | | N | 52 | 52 | 49 |
| | CD31neg51pos | Correlation Coefficient | .381** | .188 | .282* |
| | | Sig. (2-tailed) | .005 | .181 | .050 |
| | | N | 52 | 52 | 49 |
| | CD31neg51pos_54pos | Correlation Coefficient | .448** | .091 | -.051 |
| | | Sig. (2-tailed) | .001 | .520 | .726 |
| | | N | 52 | 52 | 49 |
| | CD31neg54pos2 | Correlation Coefficient | 1.000 | -.021 | -.013 |
| | | Sig. (2-tailed) | . | .881 | .931 |
| | | N | 52 | 52 | 49 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | -.021 | 1.000 | .801** |
| | | Sig. (2-tailed) | .881 | . | .000 |
| | | N | 52 | 52 | 49 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in MS

**Correlations**

| | | | Volume of GAD enhancing lesions in cubic millimetres | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Sienax 2.5 with inpainting normalized Grey Matter Volume |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .125 | .024 | -.013 |
| | | Sig. (2-tailed) | .391 | .864 | .927 |
| | | N | 49 | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | .095 | .241 | .106 |
| | | Sig. (2-tailed) | .518 | .086 | .453 |
| | | N | 49 | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | .151 | .235 | .182 |
| | | Sig. (2-tailed) | .300 | .094 | .197 |
| | | N | 49 | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | -.135 | .066 | .270 |
| | | Sig. (2-tailed) | .357 | .641 | .053 |
| | | N | 49 | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | -.045 | .238 | .309* |
| | | Sig. (2-tailed) | .758 | .089 | .026 |
| | | N | 49 | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | .152 | .111 | .183 |
| | | Sig. (2-tailed) | .297 | .432 | .194 |
| | | N | 49 | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | -.045 | .010 | .084 |
| | | Sig. (2-tailed) | .759 | .943 | .552 |
| | | N | 49 | 52 | 52 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .130 | -.330* | -.070 |
| | | Sig. (2-tailed) | .372 | .017 | .622 |
| | | N | 49 | 52 | 52 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in MS

**Correlations**

| | | | Sienax 2.5 with inpainting normalized White Matter Volume | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Sienax 2.5 with inpainting normalized Neocortical Volume |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .122 | -.053 | .071 |
| | | Sig. (2-tailed) | .390 | .707 | .618 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | .155 | .061 | .115 |
| | | Sig. (2-tailed) | .272 | .666 | .418 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | .029 | -.122 | .177 |
| | | Sig. (2-tailed) | .837 | .389 | .209 |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | -.227 | -.064 | .159 |
| | | Sig. (2-tailed) | .106 | .650 | .261 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | .025 | .059 | .321* |
| | | Sig. (2-tailed) | .859 | .679 | .020 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | .026 | -.102 | .144 |
| | | Sig. (2-tailed) | .856 | .470 | .308 |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | -.058 | .012 | .094 |
| | | Sig. (2-tailed) | .680 | .935 | .508 |
| | | N | 52 | 52 | 52 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | -.407** | .482** | -.184 |
| | | Sig. (2-tailed) | .003 | .000 | .191 |
| | | N | 52 | 52 | 52 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in MS

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | -.063 | .101 | .060 |
| | | Sig. (2-tailed) | .669 | .490 | .681 |
| | | N | 49 | 49 | 49 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | .125 | .095 | .151 |
| | | Sig. (2-tailed) | .391 | .518 | .300 |
| | | N | 49 | 49 | 49 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .024 | .241 | .235 |
| | | Sig. (2-tailed) | .864 | .086 | .094 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.013 | .106 | .182 |
| | | Sig. (2-tailed) | .927 | .453 | .197 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | .122 | .155 | .029 |
| | | Sig. (2-tailed) | .390 | .272 | .837 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.053 | .061 | -.122 |
| | | Sig. (2-tailed) | .707 | .666 | .389 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .071 | .115 | .177 |
| | | Sig. (2-tailed) | .618 | .418 | .209 |
| | | N | 52 | 52 | 52 |

**Correlations**

| | | | CD31neg54pos | CD31neg51pos | CD31neg51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | .079 | .282* | -.051 |
| | | Sig. (2-tailed) | .588 | .050 | .726 |
| | | N | 49 | 49 | 49 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | -.135 | -.045 | .152 |
| | | Sig. (2-tailed) | .357 | .758 | .297 |
| | | N | 49 | 49 | 49 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .066 | .238 | .111 |
| | | Sig. (2-tailed) | .641 | .089 | .432 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | .270 | .309* | .183 |
| | | Sig. (2-tailed) | .053 | .026 | .194 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | -.227 | .025 | .026 |
| | | Sig. (2-tailed) | .106 | .859 | .856 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.064 | .059 | -.102 |
| | | Sig. (2-tailed) | .650 | .679 | .470 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .159 | .321* | .144 |
| | | Sig. (2-tailed) | .261 | .020 | .308 |
| | | N | 52 | 52 | 52 |

*. Correlation is significant at the 0.05 level (2-tailed).

**Correlations**

| | | | CD31neg54pos2 | Volume of T2 hyperintense lesions in cubic millimetres | Volume of T1 hypointense lesions in cubic millimetres |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | -.013 | .801** | 1.000 |
| | | Sig. (2-tailed) | .931 | .000 | . |
| | | N | 49 | 49 | 49 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | -.045 | .130 | .045 |
| | | Sig. (2-tailed) | .759 | .372 | .756 |
| | | N | 49 | 49 | 49 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .010 | -.330* | -.252 |
| | | Sig. (2-tailed) | .943 | .017 | .080 |
| | | N | 52 | 52 | 49 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | .084 | -.070 | -.088 |
| | | Sig. (2-tailed) | .552 | .622 | .547 |
| | | N | 52 | 52 | 49 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | -.058 | -.407** | -.388** |
| | | Sig. (2-tailed) | .680 | .003 | .006 |
| | | N | 52 | 52 | 49 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | .012 | .482** | .594** |
| | | Sig. (2-tailed) | .935 | .000 | .000 |
| | | N | 52 | 52 | 49 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .094 | -.184 | -.163 |
| | | Sig. (2-tailed) | .508 | .191 | .264 |
| | | N | 52 | 52 | 49 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in MS

**Correlations**

| | | | Volume of GAD enhancing lesions in cubic millimetres | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Sienax 2.5 with inpainting normalized Grey Matter Volume |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | .045 | -.252 | -.088 |
| | | Sig. (2-tailed) | .756 | .080 | .547 |
| | | N | 49 | 49 | 49 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | 1.000 | .083 | -.002 |
| | | Sig. (2-tailed) | . | .573 | .989 |
| | | N | 49 | 49 | 49 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .083 | 1.000 | .727** |
| | | Sig. (2-tailed) | .573 | . | .000 |
| | | N | 49 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.002 | .727** | 1.000 |
| | | Sig. (2-tailed) | .989 | .000 | . |
| | | N | 49 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | .198 | .653** | .113 |
| | | Sig. (2-tailed) | .173 | .000 | .425 |
| | | N | 49 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.097 | -.417** | -.287* |
| | | Sig. (2-tailed) | .508 | .002 | .039 |
| | | N | 49 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .076 | .811** | .928** |
| | | Sig. (2-tailed) | .605 | .000 | .000 |
| | | N | 49 | 52 | 52 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

**Correlations**

| | | | Sienax 2.5 with inpainting normalized White Matter Volume | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Sienax 2.5 with inpainting normalized Neocortical Volume |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | -.388** | .594** | -.163 |
| | | Sig. (2-tailed) | .006 | .000 | .264 |
| | | N | 49 | 49 | 49 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | .198 | -.097 | .076 |
| | | Sig. (2-tailed) | .173 | .508 | .605 |
| | | N | 49 | 49 | 49 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .653** | -.417** | .811** |
| | | Sig. (2-tailed) | .000 | .002 | .000 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | .113 | -.287* | .928** |
| | | Sig. (2-tailed) | .425 | .039 | .000 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | 1.000 | -.467** | .277* |
| | | Sig. (2-tailed) | . | .000 | .047 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.467** | 1.000 | -.306* |
| | | Sig. (2-tailed) | .000 | . | .027 |
| | | N | 52 | 52 | 52 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .277* | -.306* | 1.000 |
| | | Sig. (2-tailed) | .047 | .027 | . |
| | | N | 52 | 52 | 52 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | 1.000 | -.020 | .021 |
| | | Sig. (2-tailed) | . | .906 | .900 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | -.020 | 1.000 | .648** |
| | | Sig. (2-tailed) | .906 | . | .000 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | .021 | .648** | 1.000 |
| | | Sig. (2-tailed) | .900 | .000 | . |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | .139 | .055 | .482** |
| | | Sig. (2-tailed) | .406 | .744 | .002 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | .144 | .457** | .516** |
| | | Sig. (2-tailed) | .387 | .004 | .001 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | .049 | .341* | .687** |
| | | Sig. (2-tailed) | .770 | .036 | .000 |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | .277 | .012 | .129 |
| | | Sig. (2-tailed) | .093 | .941 | .440 |
| | | N | 38 | 38 | 38 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | -.112 | .197 | .229 |
| | | Sig. (2-tailed) | .502 | .237 | .167 |
| | | N | 38 | 38 | 38 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in RRMS

**Correlations**

| | | | CD31neg54pos | CD31neg51pos | CD31neg51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .139 | .144 | .049 |
| | | Sig. (2-tailed) | .406 | .387 | .770 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | .055 | .457** | .341* |
| | | Sig. (2-tailed) | .744 | .004 | .036 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | .482** | .516** | .687** |
| | | Sig. (2-tailed) | .002 | .001 | .000 |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | 1.000 | .250 | .359* |
| | | Sig. (2-tailed) | . | .130 | .027 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | .250 | 1.000 | .522** |
| | | Sig. (2-tailed) | .130 | . | .001 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | .359* | .522** | 1.000 |
| | | Sig. (2-tailed) | .027 | .001 | . |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | .316 | .350* | .332* |
| | | Sig. (2-tailed) | .053 | .031 | .042 |
| | | N | 38 | 38 | 38 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .121 | .263 | .151 |
| | | Sig. (2-tailed) | .469 | .110 | .367 |
| | | N | 38 | 38 | 38 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in RRMS

**Correlations**

| | | | CD31neg54pos2 | Volume of T2 hyperintense lesions in cubic millimetres | Volume of T1 hypointense lesions in cubic millimetres |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .277 | -.112 | -.115 |
| | | Sig. (2-tailed) | .093 | .502 | .512 |
| | | N | 38 | 38 | 35 |
| | CD31pos51pos | Correlation Coefficient | .012 | .197 | .216 |
| | | Sig. (2-tailed) | .941 | .237 | .213 |
| | | N | 38 | 38 | 35 |
| | CD31pos51pos_54pos | Correlation Coefficient | .129 | .229 | .175 |
| | | Sig. (2-tailed) | .440 | .167 | .315 |
| | | N | 38 | 38 | 35 |
| | CD31neg54pos | Correlation Coefficient | .316 | .121 | .141 |
| | | Sig. (2-tailed) | .053 | .469 | .417 |
| | | N | 38 | 38 | 35 |
| | CD31neg51pos | Correlation Coefficient | .350* | .263 | .358* |
| | | Sig. (2-tailed) | .031 | .110 | .035 |
| | | N | 38 | 38 | 35 |
| | CD31neg51pos_54pos | Correlation Coefficient | .332* | .151 | .127 |
| | | Sig. (2-tailed) | .042 | .367 | .466 |
| | | N | 38 | 38 | 35 |
| | CD31neg54pos2 | Correlation Coefficient | 1.000 | .015 | .047 |
| | | Sig. (2-tailed) | . | .928 | .790 |
| | | N | 38 | 38 | 35 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .015 | 1.000 | .771** |
| | | Sig. (2-tailed) | .928 | . | .000 |
| | | N | 38 | 38 | 35 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in RRMS

**Correlations**

| | | | Volume of GAD enhancing lesions in cubic millimetres | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Sienax 2.5 with inpainting normalized Grey Matter Volume |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .147 | .048 | -.055 |
| | | Sig. (2-tailed) | .400 | .776 | .743 |
| | | N | 35 | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | .109 | .247 | .060 |
| | | Sig. (2-tailed) | .532 | .135 | .720 |
| | | N | 35 | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | .130 | .215 | .091 |
| | | Sig. (2-tailed) | .458 | .195 | .588 |
| | | N | 35 | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | -.196 | .073 | .302 |
| | | Sig. (2-tailed) | .259 | .661 | .065 |
| | | N | 35 | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | -.044 | .239 | .292 |
| | | Sig. (2-tailed) | .804 | .149 | .075 |
| | | N | 35 | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | .103 | .072 | .123 |
| | | Sig. (2-tailed) | .556 | .667 | .462 |
| | | N | 35 | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | -.059 | -.072 | -.003 |
| | | Sig. (2-tailed) | .737 | .666 | .985 |
| | | N | 35 | 38 | 38 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .199 | -.275 | .106 |
| | | Sig. (2-tailed) | .251 | .095 | .527 |
| | | N | 35 | 38 | 38 |

. Correlation between conventional MRI measures in RRMS

**Correlations**

| | | | Sienax 2.5 with inpainting normalized White Matter Volume | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Sienax 2.5 with inpainting normalized Neocortical Volume |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .154 | -.172 | .038 |
| | | Sig. (2-tailed) | .357 | .301 | .820 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | .174 | .208 | .070 |
| | | Sig. (2-tailed) | .295 | .209 | .676 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | .100 | .029 | .107 |
| | | Sig. (2-tailed) | .550 | .865 | .524 |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | -.168 | -.060 | .194 |
| | | Sig. (2-tailed) | .312 | .722 | .243 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | .024 | .054 | .366* |
| | | Sig. (2-tailed) | .885 | .749 | .024 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.022 | .011 | .148 |
| | | Sig. (2-tailed) | .897 | .950 | .376 |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | -.031 | .084 | .061 |
| | | Sig. (2-tailed) | .853 | .615 | .716 |
| | | N | 38 | 38 | 38 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | -.429** | .441** | .023 |
| | | Sig. (2-tailed) | .007 | .006 | .892 |
| | | N | 38 | 38 | 38 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in RRMS

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | -.115 | .216 | .175 |
| | | Sig. (2-tailed) | .512 | .213 | .315 |
| | | N | 35 | 35 | 35 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | .147 | .109 | .130 |
| | | Sig. (2-tailed) | .400 | .532 | .458 |
| | | N | 35 | 35 | 35 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .048 | .247 | .215 |
| | | Sig. (2-tailed) | .776 | .135 | .195 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.055 | .060 | .091 |
| | | Sig. (2-tailed) | .743 | .720 | .588 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | .154 | .174 | .100 |
| | | Sig. (2-tailed) | .357 | .295 | .550 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.172 | .208 | .029 |
| | | Sig. (2-tailed) | .301 | .209 | .865 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .038 | .070 | .107 |
| | | Sig. (2-tailed) | .820 | .676 | .524 |
| | | N | 38 | 38 | 38 |

. Correlation between conventional MRI measures in RRMS

**Correlations**

| | | | CD31neg54pos | CD31neg51pos | CD31neg51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | .141 | .358* | .127 |
| | | Sig. (2-tailed) | .417 | .035 | .466 |
| | | N | 35 | 35 | 35 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | -.196 | -.044 | .103 |
| | | Sig. (2-tailed) | .259 | .804 | .556 |
| | | N | 35 | 35 | 35 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .073 | .239 | .072 |
| | | Sig. (2-tailed) | .661 | .149 | .667 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | .302 | .292 | .123 |
| | | Sig. (2-tailed) | .065 | .075 | .462 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | -.168 | .024 | -.022 |
| | | Sig. (2-tailed) | .312 | .885 | .897 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.060 | .054 | .011 |
| | | Sig. (2-tailed) | .722 | .749 | .950 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .194 | .366* | .148 |
| | | Sig. (2-tailed) | .243 | .024 | .376 |
| | | N | 38 | 38 | 38 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in RRMS

**Correlations**

| | | | CD31neg54pos2 | Volume of T2 hyperintense lesions in cubic millimetres | Volume of T1 hypointense lesions in cubic millimetres |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | .047 | .771** | 1.000 |
| | | Sig. (2-tailed) | .790 | .000 | . |
| | | N | 35 | 35 | 35 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | -.059 | .199 | .127 |
| | | Sig. (2-tailed) | .737 | .251 | .466 |
| | | N | 35 | 35 | 35 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | -.072 | -.275 | -.191 |
| | | Sig. (2-tailed) | .666 | .095 | .272 |
| | | N | 38 | 38 | 35 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.003 | .106 | .088 |
| | | Sig. (2-tailed) | .985 | .527 | .614 |
| | | N | 38 | 38 | 35 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | -.031 | -.429** | -.421* |
| | | Sig. (2-tailed) | .853 | .007 | .012 |
| | | N | 38 | 38 | 35 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | .084 | .441** | .524** |
| | | Sig. (2-tailed) | .615 | .006 | .001 |
| | | N | 38 | 38 | 35 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .061 | .023 | .020 |
| | | Sig. (2-tailed) | .716 | .892 | .909 |
| | | N | 38 | 38 | 35 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in RRMS

**Correlations**

| | | | Volume of GAD enhancing lesions in cubic millimetres | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Sienax 2.5 with inpainting normalized Grey Matter Volume |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | .127 | -.191 | .088 |
| | | Sig. (2-tailed) | .466 | .272 | .614 |
| | | N | 35 | 35 | 35 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | 1.000 | .046 | -.096 |
| | | Sig. (2-tailed) | . | .793 | .585 |
| | | N | 35 | 35 | 35 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .046 | 1.000 | .631** |
| | | Sig. (2-tailed) | .793 | . | .000 |
| | | N | 35 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.096 | .631** | 1.000 |
| | | Sig. (2-tailed) | .585 | .000 | . |
| | | N | 35 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | .188 | .632** | -.066 |
| | | Sig. (2-tailed) | .280 | .000 | .695 |
| | | N | 35 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.028 | -.285 | -.120 |
| | | Sig. (2-tailed) | .872 | .083 | .473 |
| | | N | 35 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .025 | .729** | .916** |
| | | Sig. (2-tailed) | .888 | .000 | .000 |
| | | N | 35 | 38 | 38 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between conventional MRI measures in RRMS

**Correlations**

| | | | Sienax 2.5 with inpainting normalized White Matter Volume | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Sienax 2.5 with inpainting normalized Neocortical Volume |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | -.421* | .524** | .020 |
| | | Sig. (2-tailed) | .012 | .001 | .909 |
| | | N | 35 | 35 | 35 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | .188 | -.028 | .025 |
| | | Sig. (2-tailed) | .280 | .872 | .888 |
| | | N | 35 | 35 | 35 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .632** | -.285 | .729** |
| | | Sig. (2-tailed) | .000 | .083 | .000 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.066 | -.120 | .916** |
| | | Sig. (2-tailed) | .695 | .473 | .000 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | 1.000 | -.460** | .109 |
| | | Sig. (2-tailed) | . | .004 | .515 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.460** | 1.000 | -.103 |
| | | Sig. (2-tailed) | .004 | . | .537 |
| | | N | 38 | 38 | 38 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .109 | -.103 | 1.000 |
| | | Sig. (2-tailed) | .515 | .537 | . |
| | | N | 38 | 38 | 38 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | 1.000 | -.200 | -.284 |
| | | Sig. (2-tailed) | . | .493 | .326 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | -.200 | 1.000 | .512 |
| | | Sig. (2-tailed) | .493 | . | .061 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.284 | .512 | 1.000 |
| | | Sig. (2-tailed) | .326 | .061 | . |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | .055 | -.169 | .587* |
| | | Sig. (2-tailed) | .852 | .563 | .027 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .055 | .556* | .363 |
| | | Sig. (2-tailed) | .852 | .039 | .203 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.503 | .398 | .451 |
| | | Sig. (2-tailed) | .067 | .159 | .106 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | -.270 | .182 | .565* |
| | | Sig. (2-tailed) | .350 | .533 | .035 |
| | | N | 14 | 14 | 14 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .068 | -.015 | -.064 |
| | | Sig. (2-tailed) | .817 | .958 | .829 |
| | | N | 14 | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in SPMS

**Correlations**

| | | | CD31neg54pos | CD31neg51pos | CD31neg51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | .055 | .055 | -.503 |
| | | Sig. (2-tailed) | .852 | .852 | .067 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | -.169 | .556* | .398 |
| | | Sig. (2-tailed) | .563 | .039 | .159 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | .587* | .363 | .451 |
| | | Sig. (2-tailed) | .027 | .203 | .106 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | 1.000 | .182 | .358 |
| | | Sig. (2-tailed) | . | .533 | .208 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .182 | 1.000 | .437 |
| | | Sig. (2-tailed) | .533 | . | .118 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | .358 | .437 | 1.000 |
| | | Sig. (2-tailed) | .208 | .118 | . |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | .578* | .407 | .815** |
| | | Sig. (2-tailed) | .030 | .149 | .000 |
| | | N | 14 | 14 | 14 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | .090 | .134 | -.121 |
| | | Sig. (2-tailed) | .759 | .648 | .681 |
| | | N | 14 | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between conventional MRI measures in SPMS

**Correlations**

| | | | CD31neg54pos2 | Volume of T2 hyperintense lesions in cubic millimetres | Volume of T1 hypointense lesions in cubic millimetres |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | -.270 | .068 | .238 |
| | | Sig. (2-tailed) | .350 | .817 | .413 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | .182 | -.015 | -.238 |
| | | Sig. (2-tailed) | .533 | .958 | .413 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | .565* | -.064 | -.132 |
| | | Sig. (2-tailed) | .035 | .829 | .653 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | .578* | .090 | .075 |
| | | Sig. (2-tailed) | .030 | .759 | .799 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .407 | .134 | .081 |
| | | Sig. (2-tailed) | .149 | .648 | .782 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | .815** | -.121 | -.359 |
| | | Sig. (2-tailed) | .000 | .681 | .208 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | 1.000 | -.156 | -.242 |
| | | Sig. (2-tailed) | . | .594 | .404 |
| | | N | 14 | 14 | 14 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | -.156 | 1.000 | .884** |
| | | Sig. (2-tailed) | .594 | . | .000 |
| | | N | 14 | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between conventional MRI measures in SPMS

**Correlations**

| | | | Volume of GAD enhancing lesions in cubic millimetres | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Sienax 2.5 with inpainting normalized Grey Matter Volume |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | . | -.121 | -.007 |
| | | Sig. (2-tailed) | . | .681 | .982 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | . | .262 | .354 |
| | | Sig. (2-tailed) | . | .366 | .215 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | . | .178 | .266 |
| | | Sig. (2-tailed) | . | .543 | .358 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | . | -.152 | -.055 |
| | | Sig. (2-tailed) | . | .605 | .852 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | . | .244 | .327 |
| | | Sig. (2-tailed) | . | .401 | .253 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | . | .187 | .262 |
| | | Sig. (2-tailed) | . | .523 | .366 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | . | .077 | .200 |
| | | Sig. (2-tailed) | . | .794 | .493 |
| | | N | 14 | 14 | 14 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | . | -.341 | -.481 |
| | | Sig. (2-tailed) | . | .233 | .081 |
| | | N | 14 | 14 | 14 |

. Correlation between conventional MRI measures in SPMS

**Correlations**

| | | | Sienax 2.5 with inpainting normalized White Matter Volume | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Sienax 2.5 with inpainting normalized Neocortical Volume |
|---|---|---|---|---|---|
| Spearman's rho | CD31pos | Correlation Coefficient | -.121 | .468 | .086 |
| | | Sig. (2-tailed) | .681 | .091 | .771 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | .204 | -.411 | .266 |
| | | Sig. (2-tailed) | .483 | .144 | .358 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.196 | -.473 | .174 |
| | | Sig. (2-tailed) | .503 | .088 | .553 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | -.473 | .029 | -.160 |
| | | Sig. (2-tailed) | .088 | .923 | .584 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .116 | .086 | .257 |
| | | Sig. (2-tailed) | .692 | .771 | .375 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | .143 | -.429 | .064 |
| | | Sig. (2-tailed) | .626 | .126 | .829 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | -.200 | -.341 | .051 |
| | | Sig. (2-tailed) | .493 | .233 | .864 |
| | | N | 14 | 14 | 14 |
| | Volume of T2 hyperintense lesions in cubic millimetres | Correlation Coefficient | -.046 | .569* | -.516 |
| | | Sig. (2-tailed) | .876 | .034 | .059 |
| | | N | 14 | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between conventional MRI measures in SPMS

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | .238 | -.238 | -.132 |
| | | Sig. (2-tailed) | .413 | .413 | .653 |
| | | N | 14 | 14 | 14 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | -.121 | .262 | .178 |
| | | Sig. (2-tailed) | .681 | .366 | .543 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.007 | .354 | .266 |
| | | Sig. (2-tailed) | .982 | .215 | .358 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | -.121 | .204 | -.196 |
| | | Sig. (2-tailed) | .681 | .483 | .503 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | .468 | -.411 | -.473 |
| | | Sig. (2-tailed) | .091 | .144 | .088 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .086 | .266 | .174 |
| | | Sig. (2-tailed) | .771 | .358 | .553 |
| | | N | 14 | 14 | 14 |

. Correlation between conventional MRI measures in SPMS

**Correlations**

| | | | CD31neg54pos | CD31neg51pos | CD31neg51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | .075 | .081 | -.359 |
| | | Sig. (2-tailed) | .799 | .782 | .208 |
| | | N | 14 | 14 | 14 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | -.152 | .244 | .187 |
| | | Sig. (2-tailed) | .605 | .401 | .523 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | -.055 | .327 | .262 |
| | | Sig. (2-tailed) | .852 | .253 | .366 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | -.473 | .116 | .143 |
| | | Sig. (2-tailed) | .088 | .692 | .626 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | .029 | .086 | -.429 |
| | | Sig. (2-tailed) | .923 | .771 | .126 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | -.160 | .257 | .064 |
| | | Sig. (2-tailed) | .584 | .375 | .829 |
| | | N | 14 | 14 | 14 |

**Correlations**

| | | | CD31neg54pos2 | Volume of T2 hyperintense lesions in cubic millimetres | Volume of T1 hypointense lesions in cubic millimetres |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | -.242 | .884** | 1.000 |
| | | Sig. (2-tailed) | .404 | .000 | . |
| | | N | 14 | 14 | 14 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .077 | -.341 | -.286 |
| | | Sig. (2-tailed) | .794 | .233 | .322 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | .200 | -.481 | -.396 |
| | | Sig. (2-tailed) | .493 | .081 | .161 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | -.200 | -.046 | -.128 |
| | | Sig. (2-tailed) | .493 | .876 | .664 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.341 | .569* | .722** |
| | | Sig. (2-tailed) | .233 | .034 | .004 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .051 | -.516 | -.422 |
| | | Sig. (2-tailed) | .864 | .059 | .132 |
| | | N | 14 | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between conventional MRI measures in SPMS

**Correlations**

| | | | Volume of GAD enhancing lesions in cubic millimetres | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Sienax 2.5 with inpainting normalized Grey Matter Volume |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | . | -.286 | -.396 |
| | | Sig. (2-tailed) | . | .322 | .161 |
| | | N | 14 | 14 | 14 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | . | 1.000 | .943** |
| | | Sig. (2-tailed) | . | . | .000 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | . | .943** | 1.000 |
| | | Sig. (2-tailed) | . | .000 | . |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | . | .749** | .596* |
| | | Sig. (2-tailed) | . | .002 | .025 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | . | -.543* | -.525 |
| | | Sig. (2-tailed) | . | .045 | .054 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | . | .899** | .925** |
| | | Sig. (2-tailed) | . | .000 | .000 |
| | | N | 14 | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between conventional MRI measures in SPMS

**Correlations**

| | | | Sienax 2.5 with inpainting normalized White Matter Volume | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Sienax 2.5 with inpainting normalized Neocortical Volume |
|---|---|---|---|---|---|
| Spearman's rho | Volume of T1 hypointense lesions in cubic millimetres | Correlation Coefficient | -.128 | .722** | -.422 |
| | | Sig. (2-tailed) | .664 | .004 | .132 |
| | | N | 14 | 14 | 14 |
| | Volume of GAD enhancing lesions in cubic millimetres | Correlation Coefficient | . | . | . |
| | | Sig. (2-tailed) | . | . | . |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Brain Parenchymal Volume | Correlation Coefficient | .749** | -.543* | .899** |
| | | Sig. (2-tailed) | .002 | .045 | .000 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Grey Matter Volume | Correlation Coefficient | .596* | -.525 | .925** |
| | | Sig. (2-tailed) | .025 | .054 | .000 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized White Matter Volume | Correlation Coefficient | 1.000 | -.327 | .609* |
| | | Sig. (2-tailed) | . | .253 | .021 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Lateral Ventricular Volume | Correlation Coefficient | -.327 | 1.000 | -.459 |
| | | Sig. (2-tailed) | .253 | . | .098 |
| | | N | 14 | 14 | 14 |
| | Sienax 2.5 with inpainting normalized Neocortical Volume | Correlation Coefficient | .609* | -.459 | 1.000 |
| | | Sig. (2-tailed) | .021 | .098 | . |
| | | N | 14 | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between iron MRI measures in all subjects

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | dgm_tphase_ppb_mean | wm_tphase_ppb_mean | caudate_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | 1.000 | .063 | .596** |
| | | Sig. (2-tailed) | . | .565 | .000 |
| | | N | 85 | 85 | 85 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .063 | 1.000 | .122 |
| | | Sig. (2-tailed) | .565 | . | .266 |
| | | N | 85 | 85 | 85 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .596** | .122 | 1.000 |
| | | Sig. (2-tailed) | .000 | .266 | . |
| | | N | 85 | 85 | 85 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .852** | .076 | .595** |
| | | Sig. (2-tailed) | .000 | .491 | .000 |
| | | N | 85 | 85 | 85 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .446** | .029 | .310** |
| | | Sig. (2-tailed) | .000 | .791 | .004 |
| | | N | 85 | 85 | 85 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .396** | .004 | .386** |
| | | Sig. (2-tailed) | .000 | .971 | .000 |
| | | N | 85 | 85 | 85 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .372** | .045 | .058 |
| | | Sig. (2-tailed) | .000 | .681 | .599 |
| | | N | 85 | 85 | 85 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .458** | -.063 | .140 |
| | | Sig. (2-tailed) | .000 | .570 | .200 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | putamen_ total_tphase_ ppb_mean | globus_total_ tphase_ppb_ mean | thal_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .852** | .446** | .396** |
| | | Sig. (2-tailed) | .000 | .000 | .000 |
| | | N | 85 | 85 | 85 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .076 | .029 | .004 |
| | | Sig. (2-tailed) | .491 | .791 | .971 |
| | | N | 85 | 85 | 85 |
| | caudate_total_tphase_ ppb_mean | Correlation Coefficient | .595** | .310** | .386** |
| | | Sig. (2-tailed) | .000 | .004 | .000 |
| | | N | 85 | 85 | 85 |
| | putamen_total_tphase_ ppb_mean | Correlation Coefficient | 1.000 | .314** | .312** |
| | | Sig. (2-tailed) | . | .003 | .004 |
| | | N | 85 | 85 | 85 |
| | globus_total_tphase_ppb_ mean | Correlation Coefficient | .314** | 1.000 | .187 |
| | | Sig. (2-tailed) | .003 | . | .086 |
| | | N | 85 | 85 | 85 |
| | thal_total_tphase_ppb_ mean | Correlation Coefficient | .312** | .187 | 1.000 |
| | | Sig. (2-tailed) | .004 | .086 | . |
| | | N | 85 | 85 | 85 |
| | hipp_total_tphase_ppb_ mean | Correlation Coefficient | .070 | .216* | -.072 |
| | | Sig. (2-tailed) | .524 | .047 | .510 |
| | | N | 85 | 85 | 85 |
| | amyg_total_tphase_ppb_ mean | Correlation Coefficient | .272* | .136 | -.021 |
| | | Sig. (2-tailed) | .012 | .213 | .847 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | hipp_total_tphase_ppb_mean | amyg_total_tphase_ppb_mean | accu_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .372** | .458** | .521** |
| | | Sig. (2-tailed) | .000 | .000 | .000 |
| | | N | 85 | 85 | 73 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .045 | -.063 | .010 |
| | | Sig. (2-tailed) | .681 | .570 | .932 |
| | | N | 85 | 85 | 73 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .058 | .140 | .103 |
| | | Sig. (2-tailed) | .599 | .200 | .388 |
| | | N | 85 | 85 | 73 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .070 | .272* | .449** |
| | | Sig. (2-tailed) | .524 | .012 | .000 |
| | | N | 85 | 85 | 73 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .216* | .136 | -.008 |
| | | Sig. (2-tailed) | .047 | .213 | .944 |
| | | N | 85 | 85 | 73 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | -.072 | -.021 | -.109 |
| | | Sig. (2-tailed) | .510 | .847 | .357 |
| | | N | 85 | 85 | 73 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .485** | .119 |
| | | Sig. (2-tailed) | . | .000 | .318 |
| | | N | 85 | 85 | 73 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .485** | 1.000 | .272* |
| | | Sig. (2-tailed) | .000 | . | .020 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .374** | .326** | .429** |
| | | Sig. (2-tailed) | .001 | .002 | .000 |
| | | N | 83 | 85 | 85 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .177 | .002 | -.019 |
| | | Sig. (2-tailed) | .109 | .987 | .866 |
| | | N | 83 | 85 | 85 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .433** | .281** | .295** |
| | | Sig. (2-tailed) | .000 | .009 | .006 |
| | | N | 83 | 85 | 85 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .433** | .283** | .459** |
| | | Sig. (2-tailed) | .000 | .009 | .000 |
| | | N | 83 | 85 | 85 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .246* | .474** | .144 |
| | | Sig. (2-tailed) | .025 | .000 | .188 |
| | | N | 83 | 85 | 85 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .134 | .152 | .634** |
| | | Sig. (2-tailed) | .227 | .166 | .000 |
| | | N | 83 | 85 | 85 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | -.006 | .137 | -.088 |
| | | Sig. (2-tailed) | .958 | .211 | .424 |
| | | N | 83 | 85 | 85 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .008 | .164 | .034 |
| | | Sig. (2-tailed) | .941 | .134 | .755 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .111 | .152 | .030 |
| | | Sig. (2-tailed) | .310 | .165 | .785 |
| | | N | 85 | 85 | 85 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .086 | .210 | .276* |
| | | Sig. (2-tailed) | .433 | .053 | .011 |
| | | N | 85 | 85 | 85 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .203 | .081 | .009 |
| | | Sig. (2-tailed) | .063 | .463 | .938 |
| | | N | 85 | 85 | 85 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .059 | .153 | .027 |
| | | Sig. (2-tailed) | .591 | .162 | .805 |
| | | N | 85 | 85 | 85 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .069 | .131 | .022 |
| | | Sig. (2-tailed) | .532 | .233 | .839 |
| | | N | 85 | 85 | 85 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .012 | .213 | .260* |
| | | Sig. (2-tailed) | .916 | .050 | .016 |
| | | N | 85 | 85 | 85 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .062 | -.043 | .000 |
| | | Sig. (2-tailed) | .574 | .697 | .998 |
| | | N | 85 | 85 | 85 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .079 | -.051 | -.046 |
| | | Sig. (2-tailed) | .472 | .642 | .676 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | -.052 | .241* |
| | | Sig. (2-tailed) | .637 | .026 |
| | | N | 85 | 85 |
| | wm_tphase_ppb_mean | Correlation Coefficient | -.028 | -.015 |
| | | Sig. (2-tailed) | .802 | .893 |
| | | N | 85 | 85 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.068 | .042 |
| | | Sig. (2-tailed) | .539 | .703 |
| | | N | 85 | 85 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | -.020 | .258* |
| | | Sig. (2-tailed) | .857 | .017 |
| | | N | 85 | 85 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | -.056 | .127 |
| | | Sig. (2-tailed) | .610 | .245 |
| | | N | 85 | 85 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .099 | -.009 |
| | | Sig. (2-tailed) | .368 | .936 |
| | | N | 85 | 85 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | -.010 | .131 |
| | | Sig. (2-tailed) | .925 | .234 |
| | | N | 85 | 85 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | -.053 | .043 |
| | | Sig. (2-tailed) | .631 | .699 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .075 | .078 |
| | | Sig. (2-tailed) | .494 | .480 |
| | | N | 85 | 85 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .090 | -.004 |
| | | Sig. (2-tailed) | .414 | .968 |
| | | N | 85 | 85 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.068 | -.195 |
| | | Sig. (2-tailed) | .536 | .074 |
| | | N | 85 | 85 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .066 | .071 |
| | | Sig. (2-tailed) | .549 | .520 |
| | | N | 85 | 85 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .038 | .093 |
| | | Sig. (2-tailed) | .727 | .397 |
| | | N | 85 | 85 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .099 | -.062 |
| | | Sig. (2-tailed) | .365 | .575 |
| | | N | 85 | 85 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .104 | .099 |
| | | Sig. (2-tailed) | .345 | .368 |
| | | N | 85 | 85 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | -.027 | .149 |
| | | Sig. (2-tailed) | .806 | .174 |

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | dgm_tphase_ppb_mean | wm_tphase_ppb_mean | caudate_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 85 | 85 | 85 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .521** | .010 | .103 |
| | | Sig. (2-tailed) | .000 | .932 | .388 |
| | | N | 73 | 73 | 73 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .374** | .177 | .433** |
| | | Sig. (2-tailed) | .001 | .109 | .000 |
| | | N | 83 | 83 | 83 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .326** | .002 | .281** |
| | | Sig. (2-tailed) | .002 | .987 | .009 |
| | | N | 85 | 85 | 85 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .429** | -.019 | .295** |
| | | Sig. (2-tailed) | .000 | .866 | .006 |
| | | N | 85 | 85 | 85 |
| | CD31pos | Correlation Coefficient | .111 | .086 | .203 |
| | | Sig. (2-tailed) | .310 | .433 | .063 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | .152 | .210 | .081 |
| | | Sig. (2-tailed) | .165 | .053 | .463 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | .030 | .276* | .009 |
| | | Sig. (2-tailed) | .785 | .011 | .938 |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | -.052 | -.028 | -.068 |
| | | Sig. (2-tailed) | .637 | .802 | .539 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | .241* | -.015 | .042 |
| | | Sig. (2-tailed) | .026 | .893 | .703 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | .075 | .090 | -.068 |
| | | Sig. (2-tailed) | .494 | .414 | .536 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | putamen_ total_tphase_ ppb_mean | globus_total_ tphase_ppb_ mean | thal_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_ mean | N | 85 | 85 | 85 |
| | accu_total_tphase_ppb_ mean | Correlation Coefficient | .449** | -.008 | -.109 |
| | | Sig. (2-tailed) | .000 | .944 | .357 |
| | | N | 73 | 73 | 73 |
| | rednuc_total_tphase_ ppb_mean | Correlation Coefficient | .433** | .246* | .134 |
| | | Sig. (2-tailed) | .000 | .025 | .227 |
| | | N | 83 | 83 | 83 |
| | subnig_total_tphase_ppb_ mean | Correlation Coefficient | .283** | .474** | .152 |
| | | Sig. (2-tailed) | .009 | .000 | .166 |
| | | N | 85 | 85 | 85 |
| | pulvinar_total_tphase_ ppb_mean | Correlation Coefficient | .459** | .144 | .634** |
| | | Sig. (2-tailed) | .000 | .188 | .000 |
| | | N | 85 | 85 | 85 |
| | CD31pos | Correlation Coefficient | .059 | .069 | .012 |
| | | Sig. (2-tailed) | .591 | .532 | .916 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | .153 | .131 | .213 |
| | | Sig. (2-tailed) | .162 | .233 | .050 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | .027 | .022 | .260* |
| | | Sig. (2-tailed) | .805 | .839 | .016 |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | -.020 | -.056 | .099 |
| | | Sig. (2-tailed) | .857 | .610 | .368 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | .258* | .127 | -.009 |
| | | Sig. (2-tailed) | .017 | .245 | .936 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | .066 | .038 | .099 |
| | | Sig. (2-tailed) | .549 | .727 | .365 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | hipp_total_tphase_ppb_mean | amyg_total_tphase_ppb_mean | accu_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 85 | 85 | 73 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .119 | .272* | 1.000 |
| | | Sig. (2-tailed) | .318 | .020 | . |
| | | N | 73 | 73 | 73 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | -.006 | .008 | .008 |
| | | Sig. (2-tailed) | .958 | .941 | .947 |
| | | N | 83 | 83 | 71 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .137 | .164 | -.022 |
| | | Sig. (2-tailed) | .211 | .134 | .850 |
| | | N | 85 | 85 | 73 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | -.088 | .034 | -.049 |
| | | Sig. (2-tailed) | .424 | .755 | .682 |
| | | N | 85 | 85 | 73 |
| | CD31pos | Correlation Coefficient | .062 | .079 | .045 |
| | | Sig. (2-tailed) | .574 | .472 | .706 |
| | | N | 85 | 85 | 73 |
| | CD31pos51pos | Correlation Coefficient | -.043 | -.051 | .059 |
| | | Sig. (2-tailed) | .697 | .642 | .619 |
| | | N | 85 | 85 | 73 |
| | CD31pos51pos_54pos | Correlation Coefficient | .000 | -.046 | -.089 |
| | | Sig. (2-tailed) | .998 | .676 | .453 |
| | | N | 85 | 85 | 73 |
| | CD31neg54pos | Correlation Coefficient | -.010 | -.053 | -.120 |
| | | Sig. (2-tailed) | .925 | .631 | .313 |
| | | N | 85 | 85 | 73 |
| | CD31neg51pos | Correlation Coefficient | .131 | .043 | .089 |
| | | Sig. (2-tailed) | .234 | .699 | .455 |
| | | N | 85 | 85 | 73 |
| | CD31neg51pos_54pos | Correlation Coefficient | .104 | -.027 | .028 |
| | | Sig. (2-tailed) | .345 | .806 | .817 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 83 | 85 | 85 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .008 | -.022 | -.049 |
| | | Sig. (2-tailed) | .947 | .850 | .682 |
| | | N | 71 | 73 | 73 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .367** | .354** |
| | | Sig. (2-tailed) | . | .001 | .001 |
| | | N | 83 | 83 | 83 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .367** | 1.000 | .184 |
| | | Sig. (2-tailed) | .001 | . | .092 |
| | | N | 83 | 85 | 85 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .354** | .184 | 1.000 |
| | | Sig. (2-tailed) | .001 | .092 | . |
| | | N | 83 | 85 | 85 |
| | CD31pos | Correlation Coefficient | .158 | .056 | -.026 |
| | | Sig. (2-tailed) | .155 | .608 | .817 |
| | | N | 83 | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | .047 | .202 | .149 |
| | | Sig. (2-tailed) | .676 | .064 | .174 |
| | | N | 83 | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | .028 | .120 | .013 |
| | | Sig. (2-tailed) | .802 | .275 | .907 |
| | | N | 83 | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | -.036 | -.096 | .044 |
| | | Sig. (2-tailed) | .749 | .383 | .688 |
| | | N | 83 | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | .143 | .124 | .119 |
| | | Sig. (2-tailed) | .198 | .260 | .280 |
| | | N | 83 | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.009 | .079 | .050 |
| | | Sig. (2-tailed) | .939 | .473 | .649 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 85 | 85 | 85 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .045 | .059 | -.089 |
| | | Sig. (2-tailed) | .706 | .619 | .453 |
| | | N | 73 | 73 | 73 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .158 | .047 | .028 |
| | | Sig. (2-tailed) | .155 | .676 | .802 |
| | | N | 83 | 83 | 83 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .056 | .202 | .120 |
| | | Sig. (2-tailed) | .608 | .064 | .275 |
| | | N | 85 | 85 | 85 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | -.026 | .149 | .013 |
| | | Sig. (2-tailed) | .817 | .174 | .907 |
| | | N | 85 | 85 | 85 |
| | CD31pos | Correlation Coefficient | 1.000 | -.013 | -.132 |
| | | Sig. (2-tailed) | . | .907 | .228 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | -.013 | 1.000 | .490** |
| | | Sig. (2-tailed) | .907 | . | .000 |
| | | N | 85 | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.132 | .490** | 1.000 |
| | | Sig. (2-tailed) | .228 | .000 | . |
| | | N | 85 | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | -.018 | -.126 | .559** |
| | | Sig. (2-tailed) | .869 | .251 | .000 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | .060 | .508** | .302** |
| | | Sig. (2-tailed) | .584 | .000 | .005 |
| | | N | 85 | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.092 | .299** | .489** |
| | | Sig. (2-tailed) | .403 | .005 | .000 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 85 | 85 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | -.120 | .089 |
| | | Sig. (2-tailed) | .313 | .455 |
| | | N | 73 | 73 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | -.036 | .143 |
| | | Sig. (2-tailed) | .749 | .198 |
| | | N | 83 | 83 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | -.096 | .124 |
| | | Sig. (2-tailed) | .383 | .260 |
| | | N | 85 | 85 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .044 | .119 |
| | | Sig. (2-tailed) | .688 | .280 |
| | | N | 85 | 85 |
| | CD31pos | Correlation Coefficient | -.018 | .060 |
| | | Sig. (2-tailed) | .869 | .584 |
| | | N | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | -.126 | .508** |
| | | Sig. (2-tailed) | .251 | .000 |
| | | N | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | .559** | .302** |
| | | Sig. (2-tailed) | .000 | .005 |
| | | N | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | 1.000 | .062 |
| | | Sig. (2-tailed) | . | .572 |
| | | N | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | .062 | 1.000 |
| | | Sig. (2-tailed) | .572 | . |
| | | N | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | .177 | .394** |
| | | Sig. (2-tailed) | .104 | .000 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 85 | 85 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .028 | .031 |
| | | Sig. (2-tailed) | .817 | .793 |
| | | N | 73 | 73 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | -.009 | .094 |
| | | Sig. (2-tailed) | .939 | .399 |
| | | N | 83 | 83 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .079 | .001 |
| | | Sig. (2-tailed) | .473 | .990 |
| | | N | 85 | 85 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .050 | .090 |
| | | Sig. (2-tailed) | .649 | .413 |
| | | N | 85 | 85 |
| | CD31pos | Correlation Coefficient | -.092 | .010 |
| | | Sig. (2-tailed) | .403 | .930 |
| | | N | 85 | 85 |
| | CD31pos51pos | Correlation Coefficient | .299** | .071 |
| | | Sig. (2-tailed) | .005 | .516 |
| | | N | 85 | 85 |
| | CD31pos51pos_54pos | Correlation Coefficient | .489** | .132 |
| | | Sig. (2-tailed) | .000 | .230 |
| | | N | 85 | 85 |
| | CD31neg54pos | Correlation Coefficient | .177 | .212 |
| | | Sig. (2-tailed) | .104 | .051 |
| | | N | 85 | 85 |
| | CD31neg51pos | Correlation Coefficient | .394** | .325** |
| | | Sig. (2-tailed) | .000 | .002 |
| | | N | 85 | 85 |
| | CD31neg51pos_54pos | Correlation Coefficient | 1.000 | .482** |
| | | Sig. (2-tailed) | . | .000 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | dgm_tphase_ ppb_mean | wm_tphase_ ppb_mean | caudate_ total_tphase_ ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 85 | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | .078 | -.004 | -.195 |
| | | Sig. (2-tailed) | .480 | .968 | .074 |
| | | N | 85 | 85 | 85 |

**Correlations**

| | | | putamen_ total_tphase_ ppb_mean | globus_total_ tphase_ppb_ mean | thal_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 85 | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | .071 | .093 | -.062 |
| | | Sig. (2-tailed) | .520 | .397 | .575 |
| | | N | 85 | 85 | 85 |

**Correlations**

| | | | hipp_total_ tphase_ppb_ mean | amyg_total_ tphase_ppb_ mean | accu_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 85 | 85 | 73 |
| | CD31neg54pos2 | Correlation Coefficient | .099 | .149 | .031 |
| | | Sig. (2-tailed) | .368 | .174 | .793 |
| | | N | 85 | 85 | 73 |

. Correlation between iron MRI measures in all subjects

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 83 | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | .094 | .001 | .090 |
| | | Sig. (2-tailed) | .399 | .990 | .413 |
| | | N | 83 | 85 | 85 |

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 85 | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | .010 | .071 | .132 |
| | | Sig. (2-tailed) | .930 | .516 | .230 |
| | | N | 85 | 85 | 85 |

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | .212 | .325** |
| | | Sig. (2-tailed) | .051 | .002 |
| | | N | 85 | 85 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 85 | 85 |
| | CD31neg54pos2 | Correlation Coefficient | .482** | 1.000 |
| | | Sig. (2-tailed) | .000 | . |
| | | N | 85 | 85 |

**. Correlation is significant at the 0.01 level (2-tailed).

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | dgm_tphase_ppb_mean | wm_tphase_ppb_mean | caudate_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | 1.000 | -.108 | .568** |
| | | Sig. (2-tailed) | . | .549 | .001 |
| | | N | 33 | 33 | 33 |
| | wm_tphase_ppb_mean | Correlation Coefficient | -.108 | 1.000 | .125 |
| | | Sig. (2-tailed) | .549 | . | .489 |
| | | N | 33 | 33 | 33 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .568** | .125 | 1.000 |
| | | Sig. (2-tailed) | .001 | .489 | . |
| | | N | 33 | 33 | 33 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .757** | -.158 | .603** |
| | | Sig. (2-tailed) | .000 | .380 | .000 |
| | | N | 33 | 33 | 33 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .450** | -.018 | .139 |
| | | Sig. (2-tailed) | .009 | .921 | .441 |
| | | N | 33 | 33 | 33 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .546** | .170 | .598** |
| | | Sig. (2-tailed) | .001 | .345 | .000 |
| | | N | 33 | 33 | 33 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .551** | .113 | .197 |
| | | Sig. (2-tailed) | .001 | .531 | .271 |
| | | N | 33 | 33 | 33 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .548** | -.033 | .131 |
| | | Sig. (2-tailed) | .001 | .855 | .466 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | putamen_total_tphase_ppb_mean | globus_total_tphase_ppb_mean | thal_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .757** | .450** | .546** |
| | | Sig. (2-tailed) | .000 | .009 | .001 |
| | | N | 33 | 33 | 33 |
| | wm_tphase_ppb_mean | Correlation Coefficient | -.158 | -.018 | .170 |
| | | Sig. (2-tailed) | .380 | .921 | .345 |
| | | N | 33 | 33 | 33 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .603** | .139 | .598** |
| | | Sig. (2-tailed) | .000 | .441 | .000 |
| | | N | 33 | 33 | 33 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .255 | .438* |
| | | Sig. (2-tailed) | . | .152 | .011 |
| | | N | 33 | 33 | 33 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .255 | 1.000 | .092 |
| | | Sig. (2-tailed) | .152 | . | .610 |
| | | N | 33 | 33 | 33 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .438* | .092 | 1.000 |
| | | Sig. (2-tailed) | .011 | .610 | . |
| | | N | 33 | 33 | 33 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .074 | .436* | .286 |
| | | Sig. (2-tailed) | .684 | .011 | .107 |
| | | N | 33 | 33 | 33 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .249 | .152 | .130 |
| | | Sig. (2-tailed) | .163 | .398 | .472 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | hipp_total_tphase_ppb_mean | amyg_total_tphase_ppb_mean | accu_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .551** | .548** | .512** |
| | | Sig. (2-tailed) | .001 | .001 | .008 |
| | | N | 33 | 33 | 26 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .113 | -.033 | -.186 |
| | | Sig. (2-tailed) | .531 | .855 | .362 |
| | | N | 33 | 33 | 26 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .197 | .131 | -.039 |
| | | Sig. (2-tailed) | .271 | .466 | .851 |
| | | N | 33 | 33 | 26 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .074 | .249 | .512** |
| | | Sig. (2-tailed) | .684 | .163 | .007 |
| | | N | 33 | 33 | 26 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .436* | .152 | .290 |
| | | Sig. (2-tailed) | .011 | .398 | .150 |
| | | N | 33 | 33 | 26 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .286 | .130 | -.198 |
| | | Sig. (2-tailed) | .107 | .472 | .332 |
| | | N | 33 | 33 | 26 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .475** | .022 |
| | | Sig. (2-tailed) | . | .005 | .914 |
| | | N | 33 | 33 | 26 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .475** | 1.000 | .187 |
| | | Sig. (2-tailed) | .005 | . | .360 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .631** | .546** | .612** |
| | | Sig. (2-tailed) | .000 | .001 | .000 |
| | | N | 33 | 33 | 33 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .009 | -.050 | .124 |
| | | Sig. (2-tailed) | .959 | .782 | .493 |
| | | N | 33 | 33 | 33 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .660** | .423* | .547** |
| | | Sig. (2-tailed) | .000 | .014 | .001 |
| | | N | 33 | 33 | 33 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .525** | .470** | .568** |
| | | Sig. (2-tailed) | .002 | .006 | .001 |
| | | N | 33 | 33 | 33 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .191 | .618** | .054 |
| | | Sig. (2-tailed) | .287 | .000 | .766 |
| | | N | 33 | 33 | 33 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .308 | .314 | .707** |
| | | Sig. (2-tailed) | .081 | .075 | .000 |
| | | N | 33 | 33 | 33 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .197 | .274 | .144 |
| | | Sig. (2-tailed) | .273 | .123 | .423 |
| | | N | 33 | 33 | 33 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .056 | .135 | .288 |
| | | Sig. (2-tailed) | .755 | .455 | .104 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | -.086 | -.145 | -.018 |
| | | Sig. (2-tailed) | .635 | .422 | .919 |
| | | N | 33 | 33 | 33 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .167 | .168 | .231 |
| | | Sig. (2-tailed) | .352 | .350 | .195 |
| | | N | 33 | 33 | 33 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .117 | -.199 | .067 |
| | | Sig. (2-tailed) | .517 | .268 | .712 |
| | | N | 33 | 33 | 33 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | -.104 | -.089 | .075 |
| | | Sig. (2-tailed) | .565 | .623 | .679 |
| | | N | 33 | 33 | 33 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | -.035 | .294 | -.162 |
| | | Sig. (2-tailed) | .846 | .097 | .368 |
| | | N | 33 | 33 | 33 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | -.043 | -.006 | .348* |
| | | Sig. (2-tailed) | .812 | .972 | .047 |
| | | N | 33 | 33 | 33 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .185 | -.122 | -.028 |
| | | Sig. (2-tailed) | .302 | .498 | .877 |
| | | N | 33 | 33 | 33 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .010 | -.184 | -.107 |
| | | Sig. (2-tailed) | .957 | .304 | .552 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | -.138 | .051 |
| | | Sig. (2-tailed) | .443 | .778 |
| | | N | 33 | 33 |
| | wm_tphase_ppb_mean | Correlation Coefficient | -.127 | -.242 |
| | | Sig. (2-tailed) | .481 | .174 |
| | | N | 33 | 33 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .118 | -.208 |
| | | Sig. (2-tailed) | .512 | .245 |
| | | N | 33 | 33 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .006 | .140 |
| | | Sig. (2-tailed) | .975 | .438 |
| | | N | 33 | 33 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | -.530** | .149 |
| | | Sig. (2-tailed) | .002 | .408 |
| | | N | 33 | 33 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .219 | -.186 |
| | | Sig. (2-tailed) | .220 | .299 |
| | | N | 33 | 33 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | -.150 | .035 |
| | | Sig. (2-tailed) | .403 | .848 |
| | | N | 33 | 33 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | -.098 | -.001 |
| | | Sig. (2-tailed) | .588 | .998 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .077 | .285 |
| | | Sig. (2-tailed) | .670 | .108 |
| | | N | 33 | 33 |
| | wm_tphase_ppb_mean | Correlation Coefficient | -.002 | -.096 |
| | | Sig. (2-tailed) | .990 | .595 |
| | | N | 33 | 33 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.009 | -.011 |
| | | Sig. (2-tailed) | .961 | .951 |
| | | N | 33 | 33 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .121 | .303 |
| | | Sig. (2-tailed) | .502 | .087 |
| | | N | 33 | 33 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .100 | -.106 |
| | | Sig. (2-tailed) | .579 | .559 |
| | | N | 33 | 33 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .072 | .040 |
| | | Sig. (2-tailed) | .690 | .823 |
| | | N | 33 | 33 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .106 | .109 |
| | | Sig. (2-tailed) | .558 | .545 |
| | | N | 33 | 33 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | -.136 | .223 |
| | | Sig. (2-tailed) | .452 | .213 |

. Correlation between iron MRI measures in HC

**Correlations**

| | | | dgm_tphase_ppb_mean | wm_tphase_ppb_mean | caudate_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 33 | 33 | 33 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .512** | -.186 | -.039 |
| | | Sig. (2-tailed) | .008 | .362 | .851 |
| | | N | 26 | 26 | 26 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .631** | .009 | .660** |
| | | Sig. (2-tailed) | .000 | .959 | .000 |
| | | N | 33 | 33 | 33 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .546** | -.050 | .423* |
| | | Sig. (2-tailed) | .001 | .782 | .014 |
| | | N | 33 | 33 | 33 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .612** | .124 | .547** |
| | | Sig. (2-tailed) | .000 | .493 | .001 |
| | | N | 33 | 33 | 33 |
| | CD31pos | Correlation Coefficient | -.086 | .167 | .117 |
| | | Sig. (2-tailed) | .635 | .352 | .517 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | -.145 | .168 | -.199 |
| | | Sig. (2-tailed) | .422 | .350 | .268 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.018 | .231 | .067 |
| | | Sig. (2-tailed) | .919 | .195 | .712 |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | -.138 | -.127 | .118 |
| | | Sig. (2-tailed) | .443 | .481 | .512 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | .051 | -.242 | -.208 |
| | | Sig. (2-tailed) | .778 | .174 | .245 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | .077 | -.002 | -.009 |
| | | Sig. (2-tailed) | .670 | .990 | .961 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | putamen_total_tphase_ppb_mean | globus_total_tphase_ppb_mean | thal_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 33 | 33 | 33 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .512** | .290 | -.198 |
| | | Sig. (2-tailed) | .007 | .150 | .332 |
| | | N | 26 | 26 | 26 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .525** | .191 | .308 |
| | | Sig. (2-tailed) | .002 | .287 | .081 |
| | | N | 33 | 33 | 33 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .470** | .618** | .314 |
| | | Sig. (2-tailed) | .006 | .000 | .075 |
| | | N | 33 | 33 | 33 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .568** | .054 | .707** |
| | | Sig. (2-tailed) | .001 | .766 | .000 |
| | | N | 33 | 33 | 33 |
| | CD31pos | Correlation Coefficient | -.104 | -.035 | -.043 |
| | | Sig. (2-tailed) | .565 | .846 | .812 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | -.089 | .294 | -.006 |
| | | Sig. (2-tailed) | .623 | .097 | .972 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | .075 | -.162 | .348* |
| | | Sig. (2-tailed) | .679 | .368 | .047 |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | .006 | -.530** | .219 |
| | | Sig. (2-tailed) | .975 | .002 | .220 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | .140 | .149 | -.186 |
| | | Sig. (2-tailed) | .438 | .408 | .299 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | .121 | .100 | .072 |
| | | Sig. (2-tailed) | .502 | .579 | .690 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | hipp_total_tphase_ppb_mean | amyg_total_tphase_ppb_mean | accu_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 33 | 33 | 26 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .022 | .187 | 1.000 |
| | | Sig. (2-tailed) | .914 | .360 | . |
| | | N | 26 | 26 | 26 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .197 | .056 | .437* |
| | | Sig. (2-tailed) | .273 | .755 | .026 |
| | | N | 33 | 33 | 26 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .274 | .135 | .111 |
| | | Sig. (2-tailed) | .123 | .455 | .589 |
| | | N | 33 | 33 | 26 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .144 | .288 | .117 |
| | | Sig. (2-tailed) | .423 | .104 | .568 |
| | | N | 33 | 33 | 26 |
| | CD31pos | Correlation Coefficient | .185 | .010 | -.245 |
| | | Sig. (2-tailed) | .302 | .957 | .227 |
| | | N | 33 | 33 | 26 |
| | CD31pos51pos | Correlation Coefficient | -.122 | -.184 | -.150 |
| | | Sig. (2-tailed) | .498 | .304 | .464 |
| | | N | 33 | 33 | 26 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.028 | -.107 | -.264 |
| | | Sig. (2-tailed) | .877 | .552 | .193 |
| | | N | 33 | 33 | 26 |
| | CD31neg54pos | Correlation Coefficient | -.150 | -.098 | -.252 |
| | | Sig. (2-tailed) | .403 | .588 | .214 |
| | | N | 33 | 33 | 26 |
| | CD31neg51pos | Correlation Coefficient | .035 | -.001 | .054 |
| | | Sig. (2-tailed) | .848 | .998 | .792 |
| | | N | 33 | 33 | 26 |
| | CD31neg51pos_54pos | Correlation Coefficient | .106 | -.136 | -.077 |
| | | Sig. (2-tailed) | .558 | .452 | .708 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 33 | 33 | 33 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .437* | .111 | .117 |
| | | Sig. (2-tailed) | .026 | .589 | .568 |
| | | N | 26 | 26 | 26 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .423* | .472** |
| | | Sig. (2-tailed) | . | .014 | .006 |
| | | N | 33 | 33 | 33 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .423* | 1.000 | .296 |
| | | Sig. (2-tailed) | .014 | . | .094 |
| | | N | 33 | 33 | 33 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .472** | .296 | 1.000 |
| | | Sig. (2-tailed) | .006 | .094 | . |
| | | N | 33 | 33 | 33 |
| | CD31pos | Correlation Coefficient | -.096 | -.020 | -.162 |
| | | Sig. (2-tailed) | .594 | .910 | .368 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | -.226 | .258 | -.262 |
| | | Sig. (2-tailed) | .206 | .147 | .141 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.155 | .027 | -.012 |
| | | Sig. (2-tailed) | .388 | .883 | .947 |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | -.099 | -.303 | .117 |
| | | Sig. (2-tailed) | .584 | .086 | .516 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | -.097 | .233 | -.152 |
| | | Sig. (2-tailed) | .592 | .193 | .400 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | .019 | .123 | -.008 |
| | | Sig. (2-tailed) | .918 | .495 | .964 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 33 | 33 | 33 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | -.245 | -.150 | -.264 |
| | | Sig. (2-tailed) | .227 | .464 | .193 |
| | | N | 26 | 26 | 26 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | -.096 | -.226 | -.155 |
| | | Sig. (2-tailed) | .594 | .206 | .388 |
| | | N | 33 | 33 | 33 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | -.020 | .258 | .027 |
| | | Sig. (2-tailed) | .910 | .147 | .883 |
| | | N | 33 | 33 | 33 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | -.162 | -.262 | -.012 |
| | | Sig. (2-tailed) | .368 | .141 | .947 |
| | | N | 33 | 33 | 33 |
| | CD31pos | Correlation Coefficient | 1.000 | -.019 | -.243 |
| | | Sig. (2-tailed) | . | .916 | .173 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | -.019 | 1.000 | .353* |
| | | Sig. (2-tailed) | .916 | . | .044 |
| | | N | 33 | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.243 | .353* | 1.000 |
| | | Sig. (2-tailed) | .173 | .044 | . |
| | | N | 33 | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | -.220 | -.317 | .563** |
| | | Sig. (2-tailed) | .219 | .072 | .001 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | -.046 | .394* | .181 |
| | | Sig. (2-tailed) | .798 | .023 | .313 |
| | | N | 33 | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.091 | .268 | .294 |
| | | Sig. (2-tailed) | .613 | .132 | .097 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 33 | 33 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | -.252 | .054 |
| | | Sig. (2-tailed) | .214 | .792 |
| | | N | 26 | 26 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | -.099 | -.097 |
| | | Sig. (2-tailed) | .584 | .592 |
| | | N | 33 | 33 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | -.303 | .233 |
| | | Sig. (2-tailed) | .086 | .193 |
| | | N | 33 | 33 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .117 | -.152 |
| | | Sig. (2-tailed) | .516 | .400 |
| | | N | 33 | 33 |
| | CD31pos | Correlation Coefficient | -.220 | -.046 |
| | | Sig. (2-tailed) | .219 | .798 |
| | | N | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | -.317 | .394* |
| | | Sig. (2-tailed) | .072 | .023 |
| | | N | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | .563** | .181 |
| | | Sig. (2-tailed) | .001 | .313 |
| | | N | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | 1.000 | -.056 |
| | | Sig. (2-tailed) | . | .756 |
| | | N | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | -.056 | 1.000 |
| | | Sig. (2-tailed) | .756 | . |
| | | N | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.097 | .320 |
| | | Sig. (2-tailed) | .591 | .069 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 33 | 33 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | -.077 | .143 |
| | | Sig. (2-tailed) | .708 | .485 |
| | | N | 26 | 26 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .019 | .030 |
| | | Sig. (2-tailed) | .918 | .867 |
| | | N | 33 | 33 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .123 | .094 |
| | | Sig. (2-tailed) | .495 | .602 |
| | | N | 33 | 33 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | -.008 | .297 |
| | | Sig. (2-tailed) | .964 | .093 |
| | | N | 33 | 33 |
| | CD31pos | Correlation Coefficient | -.091 | -.162 |
| | | Sig. (2-tailed) | .613 | .366 |
| | | N | 33 | 33 |
| | CD31pos51pos | Correlation Coefficient | .268 | .119 |
| | | Sig. (2-tailed) | .132 | .510 |
| | | N | 33 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | .294 | .007 |
| | | Sig. (2-tailed) | .097 | .971 |
| | | N | 33 | 33 |
| | CD31neg54pos | Correlation Coefficient | -.097 | -.094 |
| | | Sig. (2-tailed) | .591 | .604 |
| | | N | 33 | 33 |
| | CD31neg51pos | Correlation Coefficient | .320 | .368* |
| | | Sig. (2-tailed) | .069 | .035 |
| | | N | 33 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | 1.000 | .536** |
| | | Sig. (2-tailed) | . | .001 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in HC

**Correlations**

| | | | dgm_tphase_ ppb_mean | wm_tphase_ ppb_mean | caudate_ total_tphase_ ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 33 | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | .285 | -.096 | -.011 |
| | | Sig. (2-tailed) | .108 | .595 | .951 |
| | | N | 33 | 33 | 33 |

**Correlations**

| | | | putamen_ total_tphase_ ppb_mean | globus_total_ tphase_ppb_ mean | thal_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 33 | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | .303 | -.106 | .040 |
| | | Sig. (2-tailed) | .087 | .559 | .823 |
| | | N | 33 | 33 | 33 |

**Correlations**

| | | | hipp_total_ tphase_ppb_ mean | amyg_total_ tphase_ppb_ mean | accu_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 33 | 33 | 26 |
| | CD31neg54pos2 | Correlation Coefficient | .109 | .223 | .143 |
| | | Sig. (2-tailed) | .545 | .213 | .485 |
| | | N | 33 | 33 | 26 |

. Correlation between iron MRI measures in HC

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 33 | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | .030 | .094 | .297 |
| | | Sig. (2-tailed) | .867 | .602 | .093 |
| | | N | 33 | 33 | 33 |

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 33 | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | -.162 | .119 | .007 |
| | | Sig. (2-tailed) | .366 | .510 | .971 |
| | | N | 33 | 33 | 33 |

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | -.094 | .368* |
| | | Sig. (2-tailed) | .604 | .035 |
| | | N | 33 | 33 |

*. Correlation is significant at the 0.05 level (2-tailed).

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 33 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | .536** | 1.000 |
| | | Sig. (2-tailed) | .001 | . |
| | | N | 33 | 33 |

**. Correlation is significant at the 0.01 level (2-tailed).

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | dgm_tphase_ppb_mean | wm_tphase_ppb_mean | caudate_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | 1.000 | .220 | .553** |
| | | Sig. (2-tailed) | . | .117 | .000 |
| | | N | 52 | 52 | 52 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .220 | 1.000 | .163 |
| | | Sig. (2-tailed) | .117 | . | .247 |
| | | N | 52 | 52 | 52 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .553** | .163 | 1.000 |
| | | Sig. (2-tailed) | .000 | .247 | . |
| | | N | 52 | 52 | 52 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .857** | .310* | .514** |
| | | Sig. (2-tailed) | .000 | .025 | .000 |
| | | N | 52 | 52 | 52 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .408** | .075 | .399** |
| | | Sig. (2-tailed) | .003 | .596 | .003 |
| | | N | 52 | 52 | 52 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .288* | -.140 | .228 |
| | | Sig. (2-tailed) | .039 | .323 | .104 |
| | | N | 52 | 52 | 52 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .294* | .018 | .010 |
| | | Sig. (2-tailed) | .034 | .899 | .943 |
| | | N | 52 | 52 | 52 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .366** | -.063 | .143 |
| | | Sig. (2-tailed) | .008 | .659 | .310 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in MS

**Correlations**

| | | | putamen_total_tphase_ppb_mean | globus_total_tphase_ppb_mean | thal_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .857** | .408** | .288* |
| | | Sig. (2-tailed) | .000 | .003 | .039 |
| | | N | 52 | 52 | 52 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .310* | .075 | -.140 |
| | | Sig. (2-tailed) | .025 | .596 | .323 |
| | | N | 52 | 52 | 52 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .514** | .399** | .228 |
| | | Sig. (2-tailed) | .000 | .003 | .104 |
| | | N | 52 | 52 | 52 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .328* | .204 |
| | | Sig. (2-tailed) | . | .018 | .148 |
| | | N | 52 | 52 | 52 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .328* | 1.000 | .221 |
| | | Sig. (2-tailed) | .018 | . | .115 |
| | | N | 52 | 52 | 52 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .204 | .221 | 1.000 |
| | | Sig. (2-tailed) | .148 | .115 | . |
| | | N | 52 | 52 | 52 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .069 | .073 | -.332* |
| | | Sig. (2-tailed) | .628 | .609 | .016 |
| | | N | 52 | 52 | 52 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .214 | .085 | -.159 |
| | | Sig. (2-tailed) | .127 | .549 | .262 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in MS

**Correlations**

| | | | hipp_total_tphase_ppb_mean | amyg_total_tphase_ppb_mean | accu_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .294* | .366** | .539** |
| | | Sig. (2-tailed) | .034 | .008 | .000 |
| | | N | 52 | 52 | 47 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .018 | -.063 | .121 |
| | | Sig. (2-tailed) | .899 | .659 | .418 |
| | | N | 52 | 52 | 47 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .010 | .143 | .148 |
| | | Sig. (2-tailed) | .943 | .310 | .321 |
| | | N | 52 | 52 | 47 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .069 | .214 | .424** |
| | | Sig. (2-tailed) | .628 | .127 | .003 |
| | | N | 52 | 52 | 47 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .073 | .085 | -.158 |
| | | Sig. (2-tailed) | .609 | .549 | .288 |
| | | N | 52 | 52 | 47 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | -.332* | -.159 | -.073 |
| | | Sig. (2-tailed) | .016 | .262 | .624 |
| | | N | 52 | 52 | 47 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .478** | .152 |
| | | Sig. (2-tailed) | . | .000 | .308 |
| | | N | 52 | 52 | 47 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .478** | 1.000 | .296* |
| | | Sig. (2-tailed) | .000 | . | .043 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .197 | .178 | .218 |
| | | Sig. (2-tailed) | .171 | .207 | .121 |
| | | N | 50 | 52 | 52 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .316* | .045 | -.075 |
| | | Sig. (2-tailed) | .025 | .751 | .599 |
| | | N | 50 | 52 | 52 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .336* | .272 | .081 |
| | | Sig. (2-tailed) | .017 | .051 | .567 |
| | | N | 50 | 52 | 52 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .324* | .151 | .312* |
| | | Sig. (2-tailed) | .022 | .285 | .024 |
| | | N | 50 | 52 | 52 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .279* | .359** | .177 |
| | | Sig. (2-tailed) | .049 | .009 | .208 |
| | | N | 50 | 52 | 52 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | -.006 | .040 | .551** |
| | | Sig. (2-tailed) | .969 | .780 | .000 |
| | | N | 50 | 52 | 52 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | -.104 | .046 | -.234 |
| | | Sig. (2-tailed) | .471 | .748 | .095 |
| | | N | 50 | 52 | 52 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .013 | .164 | -.135 |
| | | Sig. (2-tailed) | .929 | .246 | .339 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in MS

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .193 | .255 | .121 |
| | | Sig. (2-tailed) | .170 | .068 | .391 |
| | | N | 52 | 52 | 52 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .029 | .225 | .292* |
| | | Sig. (2-tailed) | .839 | .108 | .036 |
| | | N | 52 | 52 | 52 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .167 | .108 | .079 |
| | | Sig. (2-tailed) | .237 | .445 | .577 |
| | | N | 52 | 52 | 52 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .108 | .270 | .100 |
| | | Sig. (2-tailed) | .445 | .053 | .479 |
| | | N | 52 | 52 | 52 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .135 | .017 | .120 |
| | | Sig. (2-tailed) | .341 | .905 | .396 |
| | | N | 52 | 52 | 52 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | -.003 | .305* | .212 |
| | | Sig. (2-tailed) | .981 | .028 | .131 |
| | | N | 52 | 52 | 52 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | -.008 | -.021 | .019 |
| | | Sig. (2-tailed) | .955 | .880 | .896 |
| | | N | 52 | 52 | 52 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .176 | .013 | .018 |
| | | Sig. (2-tailed) | .212 | .928 | .901 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in MS

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .024 | .268 |
| | | Sig. (2-tailed) | .864 | .054 |
| | | N | 52 | 52 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .014 | .126 |
| | | Sig. (2-tailed) | .921 | .373 |
| | | N | 52 | 52 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.118 | .034 |
| | | Sig. (2-tailed) | .404 | .809 |
| | | N | 52 | 52 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | -.019 | .299* |
| | | Sig. (2-tailed) | .894 | .031 |
| | | N | 52 | 52 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .238 | .071 |
| | | Sig. (2-tailed) | .089 | .617 |
| | | N | 52 | 52 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .039 | .078 |
| | | Sig. (2-tailed) | .785 | .584 |
| | | N | 52 | 52 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .091 | .163 |
| | | Sig. (2-tailed) | .522 | .249 |
| | | N | 52 | 52 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | -.012 | .032 |
| | | Sig. (2-tailed) | .934 | .822 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in MS

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .159 | -.012 |
| | | Sig. (2-tailed) | .261 | .931 |
| | | N | 52 | 52 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .145 | .060 |
| | | Sig. (2-tailed) | .304 | .674 |
| | | N | 52 | 52 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.057 | -.304* |
| | | Sig. (2-tailed) | .687 | .028 |
| | | N | 52 | 52 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .128 | -.027 |
| | | Sig. (2-tailed) | .366 | .848 |
| | | N | 52 | 52 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .022 | .238 |
| | | Sig. (2-tailed) | .879 | .090 |
| | | N | 52 | 52 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .154 | -.110 |
| | | Sig. (2-tailed) | .276 | .437 |
| | | N | 52 | 52 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .126 | .110 |
| | | Sig. (2-tailed) | .374 | .436 |
| | | N | 52 | 52 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .051 | .093 |
| | | Sig. (2-tailed) | .717 | .514 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in MS

**Correlations**

| | | | dgm_tphase_ppb_mean | wm_tphase_ppb_mean | caudate_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 52 | 52 | 52 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .539** | .121 | .148 |
| | | Sig. (2-tailed) | .000 | .418 | .321 |
| | | N | 47 | 47 | 47 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .197 | .316* | .336* |
| | | Sig. (2-tailed) | .171 | .025 | .017 |
| | | N | 50 | 50 | 50 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .178 | .045 | .272 |
| | | Sig. (2-tailed) | .207 | .751 | .051 |
| | | N | 52 | 52 | 52 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .218 | -.075 | .081 |
| | | Sig. (2-tailed) | .121 | .599 | .567 |
| | | N | 52 | 52 | 52 |
| | CD31pos | Correlation Coefficient | .193 | .029 | .167 |
| | | Sig. (2-tailed) | .170 | .839 | .237 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | .255 | .225 | .108 |
| | | Sig. (2-tailed) | .068 | .108 | .445 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | .121 | .292* | .079 |
| | | Sig. (2-tailed) | .391 | .036 | .577 |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | .024 | .014 | -.118 |
| | | Sig. (2-tailed) | .864 | .921 | .404 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | .268 | .126 | .034 |
| | | Sig. (2-tailed) | .054 | .373 | .809 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | .159 | .145 | -.057 |
| | | Sig. (2-tailed) | .261 | .304 | .687 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

**Correlations**

| | | | putamen_total_tphase_ppb_mean | globus_total_tphase_ppb_mean | thal_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 52 | 52 | 52 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .424** | -.158 | -.073 |
| | | Sig. (2-tailed) | .003 | .288 | .624 |
| | | N | 47 | 47 | 47 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .324* | .279* | -.006 |
| | | Sig. (2-tailed) | .022 | .049 | .969 |
| | | N | 50 | 50 | 50 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .151 | .359** | .040 |
| | | Sig. (2-tailed) | .285 | .009 | .780 |
| | | N | 52 | 52 | 52 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .312* | .177 | .551** |
| | | Sig. (2-tailed) | .024 | .208 | .000 |
| | | N | 52 | 52 | 52 |
| | CD31pos | Correlation Coefficient | .108 | .135 | -.003 |
| | | Sig. (2-tailed) | .445 | .341 | .981 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | .270 | .017 | .305* |
| | | Sig. (2-tailed) | .053 | .905 | .028 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | .100 | .120 | .212 |
| | | Sig. (2-tailed) | .479 | .396 | .131 |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | -.019 | .238 | .039 |
| | | Sig. (2-tailed) | .894 | .089 | .785 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | .299* | .071 | .078 |
| | | Sig. (2-tailed) | .031 | .617 | .584 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | .128 | .022 | .154 |
| | | Sig. (2-tailed) | .366 | .879 | .276 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

**Correlations**

| | | | hipp_total_tphase_ppb_mean | amyg_total_tphase_ppb_mean | accu_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 52 | 52 | 47 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .152 | .296* | 1.000 |
| | | Sig. (2-tailed) | .308 | .043 | . |
| | | N | 47 | 47 | 47 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | -.104 | .013 | -.168 |
| | | Sig. (2-tailed) | .471 | .929 | .270 |
| | | N | 50 | 50 | 45 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .046 | .164 | -.081 |
| | | Sig. (2-tailed) | .748 | .246 | .587 |
| | | N | 52 | 52 | 47 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | -.234 | -.135 | -.148 |
| | | Sig. (2-tailed) | .095 | .339 | .322 |
| | | N | 52 | 52 | 47 |
| | CD31pos | Correlation Coefficient | -.008 | .176 | .200 |
| | | Sig. (2-tailed) | .955 | .212 | .177 |
| | | N | 52 | 52 | 47 |
| | CD31pos51pos | Correlation Coefficient | -.021 | .013 | .163 |
| | | Sig. (2-tailed) | .880 | .928 | .275 |
| | | N | 52 | 52 | 47 |
| | CD31pos51pos_54pos | Correlation Coefficient | .019 | .018 | .012 |
| | | Sig. (2-tailed) | .896 | .901 | .935 |
| | | N | 52 | 52 | 47 |
| | CD31neg54pos | Correlation Coefficient | .091 | -.012 | -.059 |
| | | Sig. (2-tailed) | .522 | .934 | .694 |
| | | N | 52 | 52 | 47 |
| | CD31neg51pos | Correlation Coefficient | .163 | .032 | .123 |
| | | Sig. (2-tailed) | .249 | .822 | .408 |
| | | N | 52 | 52 | 47 |
| | CD31neg51pos_54pos | Correlation Coefficient | .126 | .051 | .065 |
| | | Sig. (2-tailed) | .374 | .717 | .665 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in MS

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 50 | 52 | 52 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | -.168 | -.081 | -.148 |
| | | Sig. (2-tailed) | .270 | .587 | .322 |
| | | N | 45 | 47 | 47 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .350* | .251 |
| | | Sig. (2-tailed) | . | .013 | .079 |
| | | N | 50 | 50 | 50 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .350* | 1.000 | .117 |
| | | Sig. (2-tailed) | .013 | . | .409 |
| | | N | 50 | 52 | 52 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .251 | .117 | 1.000 |
| | | Sig. (2-tailed) | .079 | .409 | . |
| | | N | 50 | 52 | 52 |
| | CD31pos | Correlation Coefficient | .312* | .108 | -.026 |
| | | Sig. (2-tailed) | .027 | .446 | .854 |
| | | N | 50 | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | .146 | .143 | .275* |
| | | Sig. (2-tailed) | .311 | .311 | .049 |
| | | N | 50 | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | .159 | .208 | .096 |
| | | Sig. (2-tailed) | .269 | .139 | .500 |
| | | N | 50 | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | .043 | .062 | .037 |
| | | Sig. (2-tailed) | .766 | .665 | .792 |
| | | N | 50 | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | .252 | .064 | .226 |
| | | Sig. (2-tailed) | .078 | .653 | .106 |
| | | N | 50 | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | .011 | .085 | .183 |
| | | Sig. (2-tailed) | .940 | .551 | .195 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in MS

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 52 | 52 | 52 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .200 | .163 | .012 |
| | | Sig. (2-tailed) | .177 | .275 | .935 |
| | | N | 47 | 47 | 47 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .312* | .146 | .159 |
| | | Sig. (2-tailed) | .027 | .311 | .269 |
| | | N | 50 | 50 | 50 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .108 | .143 | .208 |
| | | Sig. (2-tailed) | .446 | .311 | .139 |
| | | N | 52 | 52 | 52 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | -.026 | .275* | .096 |
| | | Sig. (2-tailed) | .854 | .049 | .500 |
| | | N | 52 | 52 | 52 |
| | CD31pos | Correlation Coefficient | 1.000 | -.043 | -.016 |
| | | Sig. (2-tailed) | . | .763 | .910 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | -.043 | 1.000 | .604** |
| | | Sig. (2-tailed) | .763 | . | .000 |
| | | N | 52 | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.016 | .604** | 1.000 |
| | | Sig. (2-tailed) | .910 | .000 | . |
| | | N | 52 | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | .143 | .002 | .531** |
| | | Sig. (2-tailed) | .313 | .990 | .000 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | .113 | .505** | .458** |
| | | Sig. (2-tailed) | .426 | .000 | .001 |
| | | N | 52 | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.044 | .349* | .632** |
| | | Sig. (2-tailed) | .758 | .011 | .000 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in MS

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 52 | 52 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | -.059 | .123 |
| | | Sig. (2-tailed) | .694 | .408 |
| | | N | 47 | 47 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .043 | .252 |
| | | Sig. (2-tailed) | .766 | .078 |
| | | N | 50 | 50 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .062 | .064 |
| | | Sig. (2-tailed) | .665 | .653 |
| | | N | 52 | 52 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .037 | .226 |
| | | Sig. (2-tailed) | .792 | .106 |
| | | N | 52 | 52 |
| | CD31pos | Correlation Coefficient | .143 | .113 |
| | | Sig. (2-tailed) | .313 | .426 |
| | | N | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | .002 | .505** |
| | | Sig. (2-tailed) | .990 | .000 |
| | | N | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | .531** | .458** |
| | | Sig. (2-tailed) | .000 | .001 |
| | | N | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | 1.000 | .215 |
| | | Sig. (2-tailed) | . | .125 |
| | | N | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | .215 | 1.000 |
| | | Sig. (2-tailed) | .125 | . |
| | | N | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | .358** | .487** |
| | | Sig. (2-tailed) | .009 | .000 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 52 | 52 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .065 | -.021 |
| | | Sig. (2-tailed) | .665 | .888 |
| | | N | 47 | 47 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .011 | .126 |
| | | Sig. (2-tailed) | .940 | .384 |
| | | N | 50 | 50 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .085 | -.033 |
| | | Sig. (2-tailed) | .551 | .816 |
| | | N | 52 | 52 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .183 | .007 |
| | | Sig. (2-tailed) | .195 | .960 |
| | | N | 52 | 52 |
| | CD31pos | Correlation Coefficient | -.044 | .164 |
| | | Sig. (2-tailed) | .758 | .246 |
| | | N | 52 | 52 |
| | CD31pos51pos | Correlation Coefficient | .349* | .070 |
| | | Sig. (2-tailed) | .011 | .624 |
| | | N | 52 | 52 |
| | CD31pos51pos_54pos | Correlation Coefficient | .632** | .237 |
| | | Sig. (2-tailed) | .000 | .091 |
| | | N | 52 | 52 |
| | CD31neg54pos | Correlation Coefficient | .358** | .392** |
| | | Sig. (2-tailed) | .009 | .004 |
| | | N | 52 | 52 |
| | CD31neg51pos | Correlation Coefficient | .487** | .381** |
| | | Sig. (2-tailed) | .000 | .005 |
| | | N | 52 | 52 |
| | CD31neg51pos_54pos | Correlation Coefficient | 1.000 | .448** |
| | | Sig. (2-tailed) | . | .001 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in MS

**Correlations**

| | | | dgm_tphase_ ppb_mean | wm_tphase_ ppb_mean | caudate_ total_tphase_ ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 52 | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | -.012 | .060 | -.304* |
| | | Sig. (2-tailed) | .931 | .674 | .028 |
| | | N | 52 | 52 | 52 |

*. Correlation is significant at the 0.05 level (2-tailed).

**Correlations**

| | | | putamen_ total_tphase_ ppb_mean | globus_total_ tphase_ppb_ mean | thal_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 52 | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | -.027 | .238 | -.110 |
| | | Sig. (2-tailed) | .848 | .090 | .437 |
| | | N | 52 | 52 | 52 |

**Correlations**

| | | | hipp_total_ tphase_ppb_ mean | amyg_total_ tphase_ppb_ mean | accu_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 52 | 52 | 47 |
| | CD31neg54pos2 | Correlation Coefficient | .110 | .093 | -.021 |
| | | Sig. (2-tailed) | .436 | .514 | .888 |
| | | N | 52 | 52 | 47 |

. Correlation between iron MRI measures in MS

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 50 | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | .126 | -.033 | .007 |
| | | Sig. (2-tailed) | .384 | .816 | .960 |
| | | N | 50 | 52 | 52 |

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 52 | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | .164 | .070 | .237 |
| | | Sig. (2-tailed) | .246 | .624 | .091 |
| | | N | 52 | 52 | 52 |

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | .392** | .381** |
| | | Sig. (2-tailed) | .004 | .005 |
| | | N | 52 | 52 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 52 | 52 |
| | CD31neg54pos2 | Correlation Coefficient | .448** | 1.000 |
| | | Sig. (2-tailed) | .001 | . |
| | | N | 52 | 52 |

**. Correlation is significant at the 0.01 level (2-tailed).

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | dgm_tphase_ppb_mean | wm_tphase_ppb_mean | caudate_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | 1.000 | .162 | .669** |
| | | Sig. (2-tailed) | . | .332 | .000 |
| | | N | 38 | 38 | 38 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .162 | 1.000 | .011 |
| | | Sig. (2-tailed) | .332 | . | .945 |
| | | N | 38 | 38 | 38 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .669** | .011 | 1.000 |
| | | Sig. (2-tailed) | .000 | .945 | . |
| | | N | 38 | 38 | 38 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .835** | .301 | .647** |
| | | Sig. (2-tailed) | .000 | .066 | .000 |
| | | N | 38 | 38 | 38 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .422** | .040 | .451** |
| | | Sig. (2-tailed) | .008 | .812 | .004 |
| | | N | 38 | 38 | 38 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .361* | -.169 | .349* |
| | | Sig. (2-tailed) | .026 | .309 | .032 |
| | | N | 38 | 38 | 38 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .083 | -.050 | -.111 |
| | | Sig. (2-tailed) | .621 | .764 | .506 |
| | | N | 38 | 38 | 38 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .225 | -.254 | .212 |
| | | Sig. (2-tailed) | .174 | .124 | .201 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | putamen_total_tphase_ppb_mean | globus_total_tphase_ppb_mean | thal_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .835** | .422** | .361* |
| | | Sig. (2-tailed) | .000 | .008 | .026 |
| | | N | 38 | 38 | 38 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .301 | .040 | -.169 |
| | | Sig. (2-tailed) | .066 | .812 | .309 |
| | | N | 38 | 38 | 38 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .647** | .451** | .349* |
| | | Sig. (2-tailed) | .000 | .004 | .032 |
| | | N | 38 | 38 | 38 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .383* | .311 |
| | | Sig. (2-tailed) | . | .018 | .057 |
| | | N | 38 | 38 | 38 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .383* | 1.000 | .104 |
| | | Sig. (2-tailed) | .018 | . | .534 |
| | | N | 38 | 38 | 38 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .311 | .104 | 1.000 |
| | | Sig. (2-tailed) | .057 | .534 | . |
| | | N | 38 | 38 | 38 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | -.193 | .045 | -.368* |
| | | Sig. (2-tailed) | .246 | .789 | .023 |
| | | N | 38 | 38 | 38 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .015 | .029 | -.150 |
| | | Sig. (2-tailed) | .927 | .865 | .369 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | hipp_total_tphase_ppb_mean | amyg_total_tphase_ppb_mean | accu_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .083 | .225 | .651** |
| | | Sig. (2-tailed) | .621 | .174 | .000 |
| | | N | 38 | 38 | 33 |
| | wm_tphase_ppb_mean | Correlation Coefficient | -.050 | -.254 | .148 |
| | | Sig. (2-tailed) | .764 | .124 | .410 |
| | | N | 38 | 38 | 33 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.111 | .212 | .273 |
| | | Sig. (2-tailed) | .506 | .201 | .125 |
| | | N | 38 | 38 | 33 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | -.193 | .015 | .473** |
| | | Sig. (2-tailed) | .246 | .927 | .005 |
| | | N | 38 | 38 | 33 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .045 | .029 | -.096 |
| | | Sig. (2-tailed) | .789 | .865 | .597 |
| | | N | 38 | 38 | 33 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | -.368* | -.150 | .007 |
| | | Sig. (2-tailed) | .023 | .369 | .969 |
| | | N | 38 | 38 | 33 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .472** | .136 |
| | | Sig. (2-tailed) | . | .003 | .450 |
| | | N | 38 | 38 | 33 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .472** | 1.000 | .317 |
| | | Sig. (2-tailed) | .003 | . | .072 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .142 | .141 | .096 |
| | | Sig. (2-tailed) | .403 | .400 | .568 |
| | | N | 37 | 38 | 38 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .354* | -.016 | -.072 |
| | | Sig. (2-tailed) | .032 | .924 | .668 |
| | | N | 37 | 38 | 38 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .383* | .240 | .150 |
| | | Sig. (2-tailed) | .019 | .147 | .370 |
| | | N | 37 | 38 | 38 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .299 | .127 | .233 |
| | | Sig. (2-tailed) | .072 | .448 | .159 |
| | | N | 37 | 38 | 38 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .190 | .310 | -.003 |
| | | Sig. (2-tailed) | .259 | .058 | .986 |
| | | N | 37 | 38 | 38 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | -.039 | .005 | .492** |
| | | Sig. (2-tailed) | .818 | .975 | .002 |
| | | N | 37 | 38 | 38 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | -.196 | .030 | -.384* |
| | | Sig. (2-tailed) | .245 | .859 | .017 |
| | | N | 37 | 38 | 38 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | -.239 | .134 | -.264 |
| | | Sig. (2-tailed) | .155 | .422 | .109 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .308 | .344* | .226 |
| | | Sig. (2-tailed) | .060 | .035 | .172 |
| | | N | 38 | 38 | 38 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .073 | .247 | .249 |
| | | Sig. (2-tailed) | .665 | .136 | .131 |
| | | N | 38 | 38 | 38 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .296 | .128 | -.026 |
| | | Sig. (2-tailed) | .071 | .443 | .875 |
| | | N | 38 | 38 | 38 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .196 | .234 | .136 |
| | | Sig. (2-tailed) | .237 | .158 | .417 |
| | | N | 38 | 38 | 38 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .233 | .068 | -.051 |
| | | Sig. (2-tailed) | .159 | .683 | .763 |
| | | N | 38 | 38 | 38 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .168 | .413** | .224 |
| | | Sig. (2-tailed) | .312 | .010 | .176 |
| | | N | 38 | 38 | 38 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | -.072 | -.027 | .101 |
| | | Sig. (2-tailed) | .668 | .872 | .546 |
| | | N | 38 | 38 | 38 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .215 | .037 | .047 |
| | | Sig. (2-tailed) | .196 | .827 | .778 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .067 | .265 |
| | | Sig. (2-tailed) | .688 | .109 |
| | | N | 38 | 38 |
| | wm_tphase_ppb_mean | Correlation Coefficient | -.059 | .125 |
| | | Sig. (2-tailed) | .724 | .454 |
| | | N | 38 | 38 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.234 | .075 |
| | | Sig. (2-tailed) | .158 | .654 |
| | | N | 38 | 38 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .021 | .190 |
| | | Sig. (2-tailed) | .902 | .253 |
| | | N | 38 | 38 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .037 | .106 |
| | | Sig. (2-tailed) | .827 | .527 |
| | | N | 38 | 38 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | -.018 | .188 |
| | | Sig. (2-tailed) | .915 | .258 |
| | | N | 38 | 38 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .153 | .148 |
| | | Sig. (2-tailed) | .359 | .374 |
| | | N | 38 | 38 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | -.060 | -.040 |
| | | Sig. (2-tailed) | .719 | .812 |

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .076 | -.030 |
| | | Sig. (2-tailed) | .650 | .860 |
| | | N | 38 | 38 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .066 | .093 |
| | | Sig. (2-tailed) | .694 | .578 |
| | | N | 38 | 38 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.102 | -.354* |
| | | Sig. (2-tailed) | .541 | .029 |
| | | N | 38 | 38 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .040 | -.044 |
| | | Sig. (2-tailed) | .810 | .792 |
| | | N | 38 | 38 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | -.082 | .165 |
| | | Sig. (2-tailed) | .624 | .323 |
| | | N | 38 | 38 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .181 | -.233 |
| | | Sig. (2-tailed) | .277 | .159 |
| | | N | 38 | 38 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .085 | .180 |
| | | Sig. (2-tailed) | .613 | .278 |
| | | N | 38 | 38 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | -.009 | .098 |
| | | Sig. (2-tailed) | .957 | .556 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | dgm_tphase_ppb_mean | wm_tphase_ppb_mean | caudate_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 38 | 38 | 38 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .651** | .148 | .273 |
| | | Sig. (2-tailed) | .000 | .410 | .125 |
| | | N | 33 | 33 | 33 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .142 | .354* | .383* |
| | | Sig. (2-tailed) | .403 | .032 | .019 |
| | | N | 37 | 37 | 37 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .141 | -.016 | .240 |
| | | Sig. (2-tailed) | .400 | .924 | .147 |
| | | N | 38 | 38 | 38 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .096 | -.072 | .150 |
| | | Sig. (2-tailed) | .568 | .668 | .370 |
| | | N | 38 | 38 | 38 |
| | CD31pos | Correlation Coefficient | .308 | .073 | .296 |
| | | Sig. (2-tailed) | .060 | .665 | .071 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | .344* | .247 | .128 |
| | | Sig. (2-tailed) | .035 | .136 | .443 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | .226 | .249 | -.026 |
| | | Sig. (2-tailed) | .172 | .131 | .875 |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | .067 | -.059 | -.234 |
| | | Sig. (2-tailed) | .688 | .724 | .158 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | .265 | .125 | .075 |
| | | Sig. (2-tailed) | .109 | .454 | .654 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | .076 | .066 | -.102 |
| | | Sig. (2-tailed) | .650 | .694 | .541 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | putamen_total_tphase_ppb_mean | globus_total_tphase_ppb_mean | thal_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 38 | 38 | 38 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .473** | -.096 | .007 |
| | | Sig. (2-tailed) | .005 | .597 | .969 |
| | | N | 33 | 33 | 33 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .299 | .190 | -.039 |
| | | Sig. (2-tailed) | .072 | .259 | .818 |
| | | N | 37 | 37 | 37 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .127 | .310 | .005 |
| | | Sig. (2-tailed) | .448 | .058 | .975 |
| | | N | 38 | 38 | 38 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .233 | -.003 | .492** |
| | | Sig. (2-tailed) | .159 | .986 | .002 |
| | | N | 38 | 38 | 38 |
| | CD31pos | Correlation Coefficient | .196 | .233 | .168 |
| | | Sig. (2-tailed) | .237 | .159 | .312 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | .234 | .068 | .413** |
| | | Sig. (2-tailed) | .158 | .683 | .010 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | .136 | -.051 | .224 |
| | | Sig. (2-tailed) | .417 | .763 | .176 |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | .021 | .037 | -.018 |
| | | Sig. (2-tailed) | .902 | .827 | .915 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | .190 | .106 | .188 |
| | | Sig. (2-tailed) | .253 | .527 | .258 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | .040 | -.082 | .181 |
| | | Sig. (2-tailed) | .810 | .624 | .277 |

**. Correlation is significant at the 0.01 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | hipp_total_tphase_ppb_mean | amyg_total_tphase_ppb_mean | accu_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 38 | 38 | 33 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .136 | .317 | 1.000 |
| | | Sig. (2-tailed) | .450 | .072 | . |
| | | N | 33 | 33 | 33 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | -.196 | -.239 | -.178 |
| | | Sig. (2-tailed) | .245 | .155 | .329 |
| | | N | 37 | 37 | 32 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .030 | .134 | -.036 |
| | | Sig. (2-tailed) | .859 | .422 | .842 |
| | | N | 38 | 38 | 33 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | -.384* | -.264 | -.182 |
| | | Sig. (2-tailed) | .017 | .109 | .310 |
| | | N | 38 | 38 | 33 |
| | CD31pos | Correlation Coefficient | -.072 | .215 | .202 |
| | | Sig. (2-tailed) | .668 | .196 | .260 |
| | | N | 38 | 38 | 33 |
| | CD31pos51pos | Correlation Coefficient | -.027 | .037 | .127 |
| | | Sig. (2-tailed) | .872 | .827 | .482 |
| | | N | 38 | 38 | 33 |
| | CD31pos51pos_54pos | Correlation Coefficient | .101 | .047 | .131 |
| | | Sig. (2-tailed) | .546 | .778 | .467 |
| | | N | 38 | 38 | 33 |
| | CD31neg54pos | Correlation Coefficient | .153 | -.060 | .056 |
| | | Sig. (2-tailed) | .359 | .719 | .757 |
| | | N | 38 | 38 | 33 |
| | CD31neg51pos | Correlation Coefficient | .148 | -.040 | .010 |
| | | Sig. (2-tailed) | .374 | .812 | .954 |
| | | N | 38 | 38 | 33 |
| | CD31neg51pos_54pos | Correlation Coefficient | .085 | -.009 | .022 |
| | | Sig. (2-tailed) | .613 | .957 | .902 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 37 | 38 | 38 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | -.178 | -.036 | -.182 |
| | | Sig. (2-tailed) | .329 | .842 | .310 |
| | | N | 32 | 33 | 33 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .245 | .165 |
| | | Sig. (2-tailed) | . | .144 | .330 |
| | | N | 37 | 37 | 37 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .245 | 1.000 | .062 |
| | | Sig. (2-tailed) | .144 | . | .709 |
| | | N | 37 | 38 | 38 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .165 | .062 | 1.000 |
| | | Sig. (2-tailed) | .330 | .709 | . |
| | | N | 37 | 38 | 38 |
| | CD31pos | Correlation Coefficient | .354* | .196 | .029 |
| | | Sig. (2-tailed) | .032 | .238 | .862 |
| | | N | 37 | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | .073 | .164 | .224 |
| | | Sig. (2-tailed) | .668 | .324 | .176 |
| | | N | 37 | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | .055 | .209 | .001 |
| | | Sig. (2-tailed) | .745 | .209 | .996 |
| | | N | 37 | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | -.004 | .182 | -.036 |
| | | Sig. (2-tailed) | .982 | .273 | .832 |
| | | N | 37 | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | .249 | .027 | .160 |
| | | Sig. (2-tailed) | .137 | .873 | .338 |
| | | N | 37 | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.051 | .158 | .153 |
| | | Sig. (2-tailed) | .763 | .343 | .360 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 38 | 38 | 38 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .202 | .127 | .131 |
| | | Sig. (2-tailed) | .260 | .482 | .467 |
| | | N | 33 | 33 | 33 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .354* | .073 | .055 |
| | | Sig. (2-tailed) | .032 | .668 | .745 |
| | | N | 37 | 37 | 37 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .196 | .164 | .209 |
| | | Sig. (2-tailed) | .238 | .324 | .209 |
| | | N | 38 | 38 | 38 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .029 | .224 | .001 |
| | | Sig. (2-tailed) | .862 | .176 | .996 |
| | | N | 38 | 38 | 38 |
| | CD31pos | Correlation Coefficient | 1.000 | -.020 | .021 |
| | | Sig. (2-tailed) | . | .906 | .900 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | -.020 | 1.000 | .648** |
| | | Sig. (2-tailed) | .906 | . | .000 |
| | | N | 38 | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | .021 | .648** | 1.000 |
| | | Sig. (2-tailed) | .900 | .000 | . |
| | | N | 38 | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | .139 | .055 | .482** |
| | | Sig. (2-tailed) | .406 | .744 | .002 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | .144 | .457** | .516** |
| | | Sig. (2-tailed) | .387 | .004 | .001 |
| | | N | 38 | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | .049 | .341* | .687** |
| | | Sig. (2-tailed) | .770 | .036 | .000 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 38 | 38 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .056 | .010 |
| | | Sig. (2-tailed) | .757 | .954 |
| | | N | 33 | 33 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | -.004 | .249 |
| | | Sig. (2-tailed) | .982 | .137 |
| | | N | 37 | 37 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .182 | .027 |
| | | Sig. (2-tailed) | .273 | .873 |
| | | N | 38 | 38 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | -.036 | .160 |
| | | Sig. (2-tailed) | .832 | .338 |
| | | N | 38 | 38 |
| | CD31pos | Correlation Coefficient | .139 | .144 |
| | | Sig. (2-tailed) | .406 | .387 |
| | | N | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | .055 | .457** |
| | | Sig. (2-tailed) | .744 | .004 |
| | | N | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | .482** | .516** |
| | | Sig. (2-tailed) | .002 | .001 |
| | | N | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | 1.000 | .250 |
| | | Sig. (2-tailed) | . | .130 |
| | | N | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | .250 | 1.000 |
| | | Sig. (2-tailed) | .130 | . |
| | | N | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | .359* | .522** |
| | | Sig. (2-tailed) | .027 | .001 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 38 | 38 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .022 | -.042 |
| | | Sig. (2-tailed) | .902 | .818 |
| | | N | 33 | 33 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | -.051 | .052 |
| | | Sig. (2-tailed) | .763 | .758 |
| | | N | 37 | 37 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .158 | -.056 |
| | | Sig. (2-tailed) | .343 | .737 |
| | | N | 38 | 38 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .153 | -.110 |
| | | Sig. (2-tailed) | .360 | .513 |
| | | N | 38 | 38 |
| | CD31pos | Correlation Coefficient | .049 | .277 |
| | | Sig. (2-tailed) | .770 | .093 |
| | | N | 38 | 38 |
| | CD31pos51pos | Correlation Coefficient | .341* | .012 |
| | | Sig. (2-tailed) | .036 | .941 |
| | | N | 38 | 38 |
| | CD31pos51pos_54pos | Correlation Coefficient | .687** | .129 |
| | | Sig. (2-tailed) | .000 | .440 |
| | | N | 38 | 38 |
| | CD31neg54pos | Correlation Coefficient | .359* | .316 |
| | | Sig. (2-tailed) | .027 | .053 |
| | | N | 38 | 38 |
| | CD31neg51pos | Correlation Coefficient | .522** | .350* |
| | | Sig. (2-tailed) | .001 | .031 |
| | | N | 38 | 38 |
| | CD31neg51pos_54pos | Correlation Coefficient | 1.000 | .332* |
| | | Sig. (2-tailed) | . | .042 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | dgm_tphase_ ppb_mean | wm_tphase_ ppb_mean | caudate_ total_tphase_ ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 38 | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | -.030 | .093 | -.354* |
| | | Sig. (2-tailed) | .860 | .578 | .029 |
| | | N | 38 | 38 | 38 |

*. Correlation is significant at the 0.05 level (2-tailed).

**Correlations**

| | | | putamen_ total_tphase_ ppb_mean | globus_total_ tphase_ppb_ mean | thal_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 38 | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | -.044 | .165 | -.233 |
| | | Sig. (2-tailed) | .792 | .323 | .159 |
| | | N | 38 | 38 | 38 |

**Correlations**

| | | | hipp_total_ tphase_ppb_ mean | amyg_total_ tphase_ppb_ mean | accu_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 38 | 38 | 33 |
| | CD31neg54pos2 | Correlation Coefficient | .180 | .098 | -.042 |
| | | Sig. (2-tailed) | .278 | .556 | .818 |
| | | N | 38 | 38 | 33 |

. Correlation between iron MRI measures in RRMS

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 37 | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | .052 | -.056 | -.110 |
| | | Sig. (2-tailed) | .758 | .737 | .513 |
| | | N | 37 | 38 | 38 |

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 38 | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | .277 | .012 | .129 |
| | | Sig. (2-tailed) | .093 | .941 | .440 |
| | | N | 38 | 38 | 38 |

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | .316 | .350* |
| | | Sig. (2-tailed) | .053 | .031 |
| | | N | 38 | 38 |

*. Correlation is significant at the 0.05 level (2-tailed).

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 38 | 38 |
| | CD31neg54pos2 | Correlation Coefficient | .332* | 1.000 |
| | | Sig. (2-tailed) | .042 | . |
| | | N | 38 | 38 |

*. Correlation is significant at the 0.05 level (2-tailed).

## Nonparametric Correlations

[DataSet1] C:\Users\rxz789\Documents\SPSS\VD-MRI project\CTEVD\Database\Phase I\LSU\REduced sample size with CD31 data.sav

**Correlations**

| | | | dgm_tphase_ppb_mean | wm_tphase_ppb_mean | caudate_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | 1.000 | .138 | .011 |
| | | Sig. (2-tailed) | . | .637 | .970 |
| | | N | 14 | 14 | 14 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .138 | 1.000 | .604* |
| | | Sig. (2-tailed) | .637 | . | .022 |
| | | N | 14 | 14 | 14 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .011 | .604* | 1.000 |
| | | Sig. (2-tailed) | .970 | .022 | . |
| | | N | 14 | 14 | 14 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .833** | .103 | -.081 |
| | | Sig. (2-tailed) | .000 | .725 | .782 |
| | | N | 14 | 14 | 14 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .231 | -.064 | .090 |
| | | Sig. (2-tailed) | .427 | .829 | .759 |
| | | N | 14 | 14 | 14 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .138 | -.121 | .068 |
| | | Sig. (2-tailed) | .637 | .681 | .817 |
| | | N | 14 | 14 | 14 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .859** | -.024 | .134 |
| | | Sig. (2-tailed) | .000 | .935 | .648 |
| | | N | 14 | 14 | 14 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .714** | .248 | -.007 |
| | | Sig. (2-tailed) | .004 | .392 | .982 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | putamen_total_tphase_ppb_mean | globus_total_tphase_ppb_mean | thal_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .833** | .231 | .138 |
| | | Sig. (2-tailed) | .000 | .427 | .637 |
| | | N | 14 | 14 | 14 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .103 | -.064 | -.121 |
| | | Sig. (2-tailed) | .725 | .829 | .681 |
| | | N | 14 | 14 | 14 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.081 | .090 | .068 |
| | | Sig. (2-tailed) | .782 | .759 | .817 |
| | | N | 14 | 14 | 14 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .015 | -.046 |
| | | Sig. (2-tailed) | . | .958 | .876 |
| | | N | 14 | 14 | 14 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .015 | 1.000 | .525 |
| | | Sig. (2-tailed) | .958 | . | .054 |
| | | N | 14 | 14 | 14 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | -.046 | .525 | 1.000 |
| | | Sig. (2-tailed) | .876 | .054 | . |
| | | N | 14 | 14 | 14 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .736** | .099 | -.103 |
| | | Sig. (2-tailed) | .003 | .737 | .725 |
| | | N | 14 | 14 | 14 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .596* | .090 | -.191 |
| | | Sig. (2-tailed) | .025 | .759 | .513 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | hipp_total_tphase_ppb_mean | amyg_total_tphase_ppb_mean | accu_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .859** | .714** | .279 |
| | | Sig. (2-tailed) | .000 | .004 | .334 |
| | | N | 14 | 14 | 14 |
| | wm_tphase_ppb_mean | Correlation Coefficient | -.024 | .248 | .222 |
| | | Sig. (2-tailed) | .935 | .392 | .446 |
| | | N | 14 | 14 | 14 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .134 | -.007 | -.332 |
| | | Sig. (2-tailed) | .648 | .982 | .246 |
| | | N | 14 | 14 | 14 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .736** | .596* | .407 |
| | | Sig. (2-tailed) | .003 | .025 | .149 |
| | | N | 14 | 14 | 14 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .099 | .090 | -.380 |
| | | Sig. (2-tailed) | .737 | .759 | .180 |
| | | N | 14 | 14 | 14 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | -.103 | -.191 | -.393 |
| | | Sig. (2-tailed) | .725 | .513 | .164 |
| | | N | 14 | 14 | 14 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .508 | .152 |
| | | Sig. (2-tailed) | . | .064 | .605 |
| | | N | 14 | 14 | 14 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .508 | 1.000 | .125 |
| | | Sig. (2-tailed) | .064 | . | .670 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .280 | .218 | .446 |
| | | Sig. (2-tailed) | .354 | .455 | .110 |
| | | N | 13 | 14 | 14 |
| | wm_tphase_ppb_mean | Correlation Coefficient | .143 | .323 | -.204 |
| | | Sig. (2-tailed) | .642 | .260 | .483 |
| | | N | 13 | 14 | 14 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | .044 | .600* | -.103 |
| | | Sig. (2-tailed) | .887 | .023 | .725 |
| | | N | 13 | 14 | 14 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .346 | .196 | .486 |
| | | Sig. (2-tailed) | .247 | .503 | .078 |
| | | N | 13 | 14 | 14 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .319 | .424 | .503 |
| | | Sig. (2-tailed) | .289 | .131 | .067 |
| | | N | 13 | 14 | 14 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .115 | .068 | .758** |
| | | Sig. (2-tailed) | .707 | .817 | .002 |
| | | N | 13 | 14 | 14 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .132 | .222 | .262 |
| | | Sig. (2-tailed) | .668 | .446 | .366 |
| | | N | 13 | 14 | 14 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .390 | .253 | .046 |
| | | Sig. (2-tailed) | .188 | .383 | .876 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | -.020 | -.011 | -.270 |
| | | Sig. (2-tailed) | .946 | .970 | .350 |
| | | N | 14 | 14 | 14 |
| | wm_tphase_ppb_mean | Correlation Coefficient | -.240 | .073 | .196 |
| | | Sig. (2-tailed) | .409 | .805 | .503 |
| | | N | 14 | 14 | 14 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.389 | -.068 | .262 |
| | | Sig. (2-tailed) | .169 | .817 | .366 |
| | | N | 14 | 14 | 14 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | -.007 | .437 | -.011 |
| | | Sig. (2-tailed) | .982 | .118 | .970 |
| | | N | 14 | 14 | 14 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | -.244 | -.204 | .437 |
| | | Sig. (2-tailed) | .401 | .483 | .118 |
| | | N | 14 | 14 | 14 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | -.473 | .024 | .231 |
| | | Sig. (2-tailed) | .088 | .935 | .427 |
| | | N | 14 | 14 | 14 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .099 | -.015 | -.305 |
| | | Sig. (2-tailed) | .737 | .958 | .288 |
| | | N | 14 | 14 | 14 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .213 | -.266 | -.310 |
| | | Sig. (2-tailed) | .464 | .358 | .281 |

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | -.064 | .451 |
| | | Sig. (2-tailed) | .829 | .106 |
| | | N | 14 | 14 |
| | wm_tphase_ppb_mean | Correlation Coefficient | -.095 | .226 |
| | | Sig. (2-tailed) | .748 | .436 |
| | | N | 14 | 14 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.077 | -.174 |
| | | Sig. (2-tailed) | .794 | .553 |
| | | N | 14 | 14 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | -.081 | .697** |
| | | Sig. (2-tailed) | .782 | .006 |
| | | N | 14 | 14 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .556* | .015 |
| | | Sig. (2-tailed) | .039 | .958 |
| | | N | 14 | 14 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .240 | -.073 |
| | | Sig. (2-tailed) | .409 | .805 |
| | | N | 14 | 14 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | -.152 | .336 |
| | | Sig. (2-tailed) | .605 | .240 |
| | | N | 14 | 14 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | .007 | .231 |
| | | Sig. (2-tailed) | .982 | .427 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | dgm_tphase_ppb_mean | Correlation Coefficient | .275 | .090 |
| | | Sig. (2-tailed) | .342 | .759 |
| | | N | 14 | 14 |
| | wm_tphase_ppb_mean | Correlation Coefficient | -.081 | .015 |
| | | Sig. (2-tailed) | .782 | .958 |
| | | N | 14 | 14 |
| | caudate_total_tphase_ppb_mean | Correlation Coefficient | -.090 | -.068 |
| | | Sig. (2-tailed) | .759 | .817 |
| | | N | 14 | 14 |
| | putamen_total_tphase_ppb_mean | Correlation Coefficient | .354 | .081 |
| | | Sig. (2-tailed) | .215 | .782 |
| | | N | 14 | 14 |
| | globus_total_tphase_ppb_mean | Correlation Coefficient | .332 | .398 |
| | | Sig. (2-tailed) | .246 | .159 |
| | | N | 14 | 14 |
| | thal_total_tphase_ppb_mean | Correlation Coefficient | .204 | .204 |
| | | Sig. (2-tailed) | .483 | .483 |
| | | N | 14 | 14 |
| | hipp_total_tphase_ppb_mean | Correlation Coefficient | .262 | -.011 |
| | | Sig. (2-tailed) | .366 | .970 |
| | | N | 14 | 14 |
| | amyg_total_tphase_ppb_mean | Correlation Coefficient | -.024 | .055 |
| | | Sig. (2-tailed) | .935 | .852 |

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | dgm_tphase_ppb_mean | wm_tphase_ppb_mean | caudate_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 14 | 14 | 14 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .279 | .222 | -.332 |
| | | Sig. (2-tailed) | .334 | .446 | .246 |
| | | N | 14 | 14 | 14 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .280 | .143 | .044 |
| | | Sig. (2-tailed) | .354 | .642 | .887 |
| | | N | 13 | 13 | 13 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .218 | .323 | .600* |
| | | Sig. (2-tailed) | .455 | .260 | .023 |
| | | N | 14 | 14 | 14 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .446 | -.204 | -.103 |
| | | Sig. (2-tailed) | .110 | .483 | .725 |
| | | N | 14 | 14 | 14 |
| | CD31pos | Correlation Coefficient | -.020 | -.240 | -.389 |
| | | Sig. (2-tailed) | .946 | .409 | .169 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | -.011 | .073 | -.068 |
| | | Sig. (2-tailed) | .970 | .805 | .817 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.270 | .196 | .262 |
| | | Sig. (2-tailed) | .350 | .503 | .366 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | -.064 | -.095 | -.077 |
| | | Sig. (2-tailed) | .829 | .748 | .794 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .451 | .226 | -.174 |
| | | Sig. (2-tailed) | .106 | .436 | .553 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | .275 | -.081 | -.090 |
| | | Sig. (2-tailed) | .342 | .782 | .759 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | putamen_total_tphase_ppb_mean | globus_total_tphase_ppb_mean | thal_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 14 | 14 | 14 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .407 | -.380 | -.393 |
| | | Sig. (2-tailed) | .149 | .180 | .164 |
| | | N | 14 | 14 | 14 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .346 | .319 | .115 |
| | | Sig. (2-tailed) | .247 | .289 | .707 |
| | | N | 13 | 13 | 13 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .196 | .424 | .068 |
| | | Sig. (2-tailed) | .503 | .131 | .817 |
| | | N | 14 | 14 | 14 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .486 | .503 | .758** |
| | | Sig. (2-tailed) | .078 | .067 | .002 |
| | | N | 14 | 14 | 14 |
| | CD31pos | Correlation Coefficient | -.007 | -.244 | -.473 |
| | | Sig. (2-tailed) | .982 | .401 | .088 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | .437 | -.204 | .024 |
| | | Sig. (2-tailed) | .118 | .483 | .935 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.011 | .437 | .231 |
| | | Sig. (2-tailed) | .970 | .118 | .427 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | -.081 | .556* | .240 |
| | | Sig. (2-tailed) | .782 | .039 | .409 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .697** | .015 | -.073 |
| | | Sig. (2-tailed) | .006 | .958 | .805 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | .354 | .332 | .204 |
| | | Sig. (2-tailed) | .215 | .246 | .483 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | hipp_total_tphase_ppb_mean | amyg_total_tphase_ppb_mean | accu_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 14 | 14 | 14 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .152 | .125 | 1.000 |
| | | Sig. (2-tailed) | .605 | .670 | . |
| | | N | 14 | 14 | 14 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .132 | .390 | -.066 |
| | | Sig. (2-tailed) | .668 | .188 | .831 |
| | | N | 13 | 13 | 13 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .222 | .253 | -.240 |
| | | Sig. (2-tailed) | .446 | .383 | .409 |
| | | N | 14 | 14 | 14 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .262 | .046 | -.169 |
| | | Sig. (2-tailed) | .366 | .876 | .563 |
| | | N | 14 | 14 | 14 |
| | CD31pos | Correlation Coefficient | .099 | .213 | .011 |
| | | Sig. (2-tailed) | .737 | .464 | .970 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | -.015 | -.266 | .393 |
| | | Sig. (2-tailed) | .958 | .358 | .164 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.305 | -.310 | -.152 |
| | | Sig. (2-tailed) | .288 | .281 | .605 |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | -.152 | .007 | -.301 |
| | | Sig. (2-tailed) | .605 | .982 | .296 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .336 | .231 | .503 |
| | | Sig. (2-tailed) | .240 | .427 | .067 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | .262 | -.024 | .191 |
| | | Sig. (2-tailed) | .366 | .935 | .513 |

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 13 | 14 | 14 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | -.066 | -.240 | -.169 |
| | | Sig. (2-tailed) | .831 | .409 | .563 |
| | | N | 13 | 14 | 14 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | 1.000 | .538 | .473 |
| | | Sig. (2-tailed) | . | .058 | .103 |
| | | N | 13 | 13 | 13 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | .538 | 1.000 | .147 |
| | | Sig. (2-tailed) | .058 | . | .615 |
| | | N | 13 | 14 | 14 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .473 | .147 | 1.000 |
| | | Sig. (2-tailed) | .103 | .615 | . |
| | | N | 13 | 14 | 14 |
| | CD31pos | Correlation Coefficient | .170 | -.174 | -.213 |
| | | Sig. (2-tailed) | .578 | .553 | .464 |
| | | N | 13 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | .357 | .037 | .424 |
| | | Sig. (2-tailed) | .231 | .899 | .131 |
| | | N | 13 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | .357 | .235 | .371 |
| | | Sig. (2-tailed) | .231 | .418 | .191 |
| | | N | 13 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | .000 | -.200 | .262 |
| | | Sig. (2-tailed) | 1.000 | .493 | .366 |
| | | N | 13 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .225 | .007 | .371 |
| | | Sig. (2-tailed) | .459 | .982 | .191 |
| | | N | 13 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | .126 | -.196 | .407 |
| | | Sig. (2-tailed) | .681 | .503 | .149 |

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 14 | 14 | 14 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .011 | .393 | -.152 |
| | | Sig. (2-tailed) | .970 | .164 | .605 |
| | | N | 14 | 14 | 14 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .170 | .357 | .357 |
| | | Sig. (2-tailed) | .578 | .231 | .231 |
| | | N | 13 | 13 | 13 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | -.174 | .037 | .235 |
| | | Sig. (2-tailed) | .553 | .899 | .418 |
| | | N | 14 | 14 | 14 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | -.213 | .424 | .371 |
| | | Sig. (2-tailed) | .464 | .131 | .191 |
| | | N | 14 | 14 | 14 |
| | CD31pos | Correlation Coefficient | 1.000 | -.200 | -.284 |
| | | Sig. (2-tailed) | . | .493 | .326 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | -.200 | 1.000 | .512 |
| | | Sig. (2-tailed) | .493 | . | .061 |
| | | N | 14 | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | -.284 | .512 | 1.000 |
| | | Sig. (2-tailed) | .326 | .061 | . |
| | | N | 14 | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | .055 | -.169 | .587* |
| | | Sig. (2-tailed) | .852 | .563 | .027 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .055 | .556* | .363 |
| | | Sig. (2-tailed) | .852 | .039 | .203 |
| | | N | 14 | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | -.503 | .398 | .451 |
| | | Sig. (2-tailed) | .067 | .159 | .106 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 14 | 14 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | -.301 | .503 |
| | | Sig. (2-tailed) | .296 | .067 |
| | | N | 14 | 14 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .000 | .225 |
| | | Sig. (2-tailed) | 1.000 | .459 |
| | | N | 13 | 13 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | -.200 | .007 |
| | | Sig. (2-tailed) | .493 | .982 |
| | | N | 14 | 14 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .262 | .371 |
| | | Sig. (2-tailed) | .366 | .191 |
| | | N | 14 | 14 |
| | CD31pos | Correlation Coefficient | .055 | .055 |
| | | Sig. (2-tailed) | .852 | .852 |
| | | N | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | -.169 | .556* |
| | | Sig. (2-tailed) | .563 | .039 |
| | | N | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | .587* | .363 |
| | | Sig. (2-tailed) | .027 | .203 |
| | | N | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | 1.000 | .182 |
| | | Sig. (2-tailed) | . | .533 |
| | | N | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .182 | 1.000 |
| | | Sig. (2-tailed) | .533 | . |
| | | N | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | .358 | .437 |
| | | Sig. (2-tailed) | .208 | .118 |

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | amyg_total_tphase_ppb_mean | N | 14 | 14 |
| | accu_total_tphase_ppb_mean | Correlation Coefficient | .191 | .068 |
| | | Sig. (2-tailed) | .513 | .817 |
| | | N | 14 | 14 |
| | rednuc_total_tphase_ppb_mean | Correlation Coefficient | .126 | .341 |
| | | Sig. (2-tailed) | .681 | .255 |
| | | N | 13 | 13 |
| | subnig_total_tphase_ppb_mean | Correlation Coefficient | -.196 | -.169 |
| | | Sig. (2-tailed) | .503 | .563 |
| | | N | 14 | 14 |
| | pulvinar_total_tphase_ppb_mean | Correlation Coefficient | .407 | .279 |
| | | Sig. (2-tailed) | .149 | .334 |
| | | N | 14 | 14 |
| | CD31pos | Correlation Coefficient | -.503 | -.270 |
| | | Sig. (2-tailed) | .067 | .350 |
| | | N | 14 | 14 |
| | CD31pos51pos | Correlation Coefficient | .398 | .182 |
| | | Sig. (2-tailed) | .159 | .533 |
| | | N | 14 | 14 |
| | CD31pos51pos_54pos | Correlation Coefficient | .451 | .565* |
| | | Sig. (2-tailed) | .106 | .035 |
| | | N | 14 | 14 |
| | CD31neg54pos | Correlation Coefficient | .358 | .578* |
| | | Sig. (2-tailed) | .208 | .030 |
| | | N | 14 | 14 |
| | CD31neg51pos | Correlation Coefficient | .437 | .407 |
| | | Sig. (2-tailed) | .118 | .149 |
| | | N | 14 | 14 |
| | CD31neg51pos_54pos | Correlation Coefficient | 1.000 | .815** |
| | | Sig. (2-tailed) | . | .000 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | dgm_tphase_ ppb_mean | wm_tphase_ ppb_mean | caudate_ total_tphase_ ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 14 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | .090 | .015 | -.068 |
| | | Sig. (2-tailed) | .759 | .958 | .817 |
| | | N | 14 | 14 | 14 |

**Correlations**

| | | | putamen_ total_tphase_ ppb_mean | globus_total_ tphase_ppb_ mean | thal_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 14 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | .081 | .398 | .204 |
| | | Sig. (2-tailed) | .782 | .159 | .483 |
| | | N | 14 | 14 | 14 |

**Correlations**

| | | | hipp_total_ tphase_ppb_ mean | amyg_total_ tphase_ppb_ mean | accu_total_ tphase_ppb_ mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 14 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | -.011 | .055 | .068 |
| | | Sig. (2-tailed) | .970 | .852 | .817 |
| | | N | 14 | 14 | 14 |

. Correlation between iron MRI measures in SPMS

**Correlations**

| | | | rednuc_total_tphase_ppb_mean | subnig_total_tphase_ppb_mean | pulvinar_total_tphase_ppb_mean |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 13 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | .341 | -.169 | .279 |
| | | Sig. (2-tailed) | .255 | .563 | .334 |
| | | N | 13 | 14 | 14 |

**Correlations**

| | | | CD31pos | CD31pos51pos | CD31pos51pos_54pos |
|---|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 14 | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | -.270 | .182 | .565* |
| | | Sig. (2-tailed) | .350 | .533 | .035 |
| | | N | 14 | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

**Correlations**

| | | | CD31neg54pos | CD31neg51pos |
|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | .578* | .407 |
| | | Sig. (2-tailed) | .030 | .149 |
| | | N | 14 | 14 |

*. Correlation is significant at the 0.05 level (2-tailed).

**Correlations**

| | | | CD31neg51pos_54pos | CD31neg54pos2 |
|---|---|---|---|---|
| Spearman's rho | CD31neg51pos_54pos | N | 14 | 14 |
| | CD31neg54pos2 | Correlation Coefficient | .815** | 1.000 |
| | | Sig. (2-tailed) | .000 | . |
| | | N | 14 | 14 |

**. Correlation is significant at the 0.01 level (2-tailed).

# PEM RESEARCH STUDY FOLLOW-UP SCHEDULE

| | | | | | |
|---|---|---|---|---|---|
| **MS Subjects** | | | | | |
| **ID** | **Baseline** | **Month 1** | **Month 3** | **Month 6** | **Month 12** |
| PEM001 | | | | | |
| PEM002 | | | | | |
| PEM003 | | | | | |
| PEM004 | 7/12/2011 | Skipped | 10/13/2011 | 2/28/2012 | 7/12/2012 |
| PEM005 | 7/12/2011 | 9/8/2011 | 10/12/2011 | 3/28/2012 | 7/12/2012 |
| PEM006 | 8/1/2011 | Skipped | 10/12/2011 | 2/13/2012 | 8/1/2012 |
| PEM007 | 10/26/2011 | | WITHDRAWN SMOKER | | |
| PEM008 | 1/11/2012 | 2/8/2012 | 4/11/2012 | 7/11/2012 | 1/11/2013 |
| PEM009 | 1/12/2012 | 2/12/2012 | 4/12/2012 | 7/12/2012 | 1/12/2013 |
| PEM010 | 2/8/2012 | 3/8/2012 | 5/8/2012 | 8/8/2012 | 2/8/2013 |
| PEM011 | 12/14/2011 | 1/20/2012 | 3/14/2012 | 6/14/2012 | 12/14/2012 |
| PEM012 | 2/27/2012 | 3/27/2012 | 5/27/2012 | 8/27/2012 | 2/27/2013 |
| PEM013 | 2/28/2012 | 3/28/2012 | 5/28/2012 | 8/28/2012 | 2/28/2013 |
| | | | | | |
| | | | | | |
| **Healthy Controls** | | | | | |
| **ID** | **Baseline** | **Completed?** | | | |
| HC001 | 8/31/2011 | YES | | | |
| HC002 | 8/31/2011 | YES | | | |
| | | | | | |